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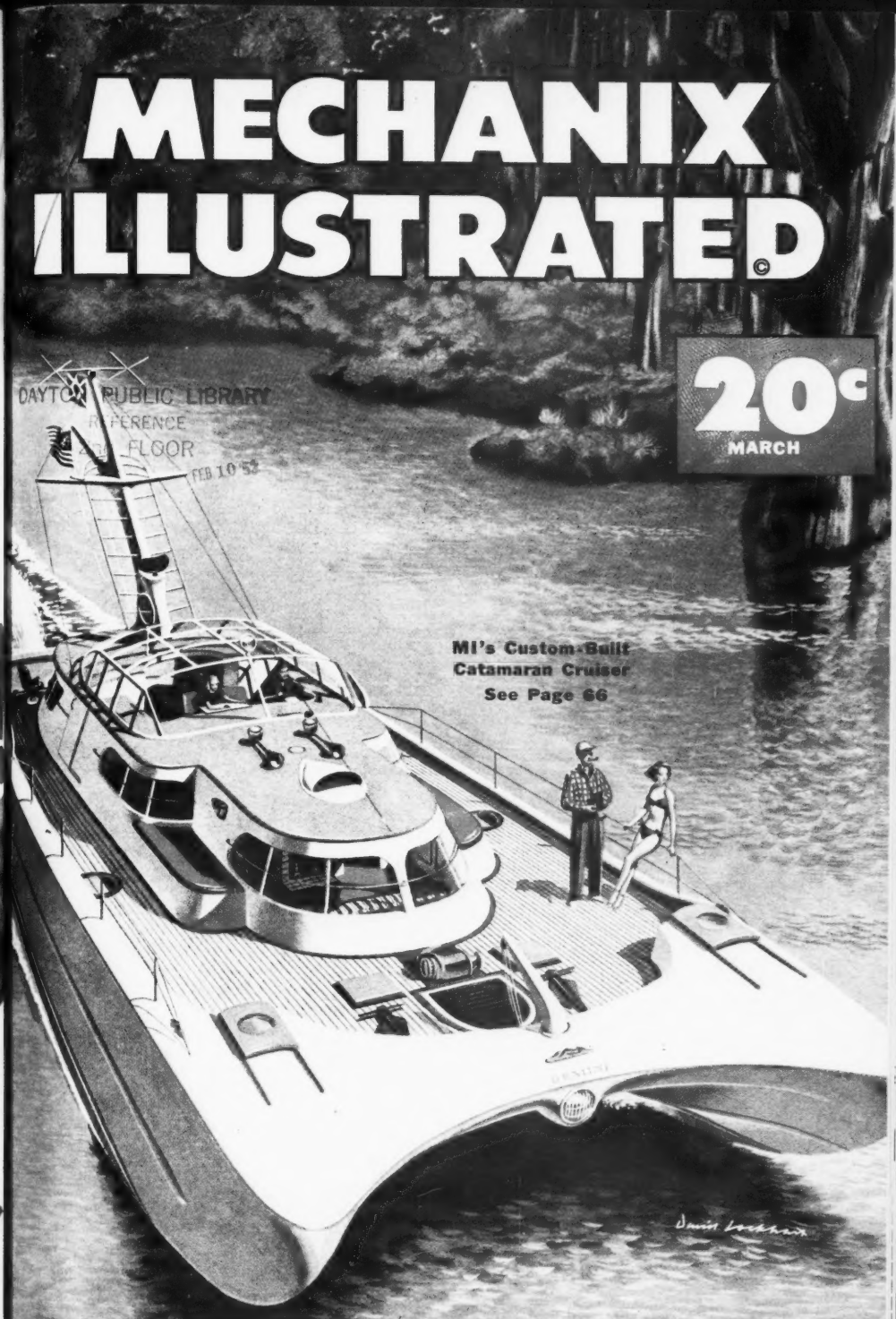

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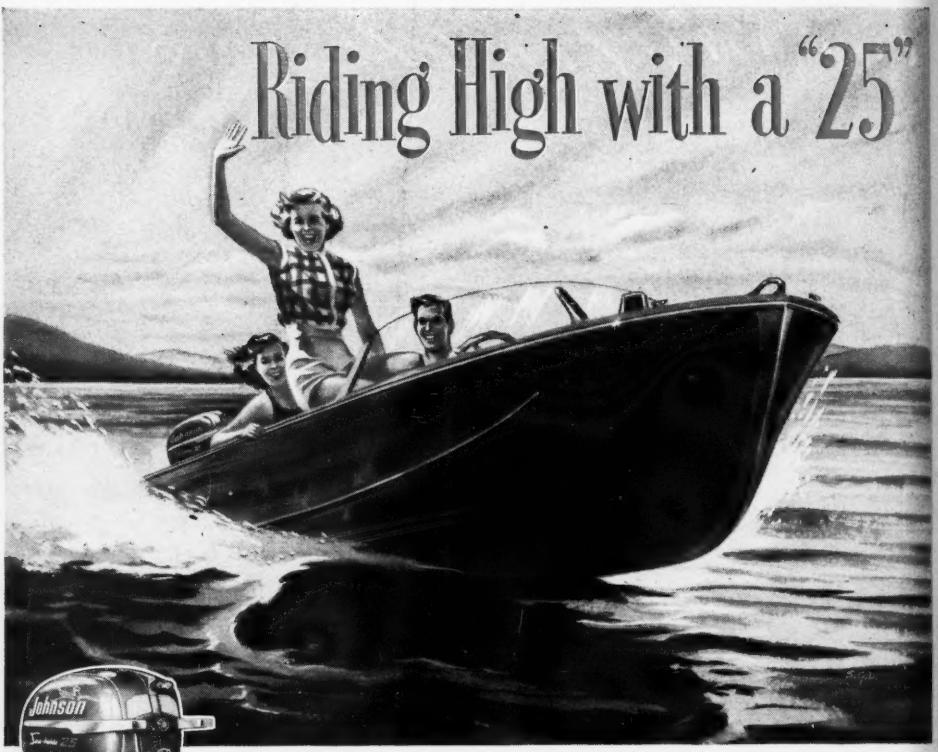

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MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Building, Fawcett Place, Greenwich, Conn. Printed in U.S.A. Editorial offices 67 W. 44th St., New York 36, N. Y. Advertising offices: New York 36, 67 W. 44th St.; Detroit 26, 1659 Guardian Building; Chicago 11, 612 N. Michigan Ave.; Los Angeles 17, 643 S. Flower St.; San Francisco 5, 605 Market St. General Offices, Fawcett Building, Fawcett Place, Greenwich, Conn. Roscoe K. Fawcett, Circulation Director; Gordon Fawcett, Treasurer; Allen M. Adams, Secretary; Al Allard, Art Director. Entered as second-class matter at the post office at Greenwich, Conn., under the act of March 3, 1879. Additional entry at Louisville, Ky. Copyright 1953 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Title registered in the U. S. Patent Office. Address manuscripts to MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N. Y. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to Circulation Department, Fawcett Building, Fawcett Place, Greenwich, Conn. Not responsible for lost manuscripts or photos. Unacceptable contributions will be returned, if accompanied by sufficient first class postage. Price 20c a copy, in the United States and Possessions and Canada. Subscriptions $2.40 per year in the U. S., Possessions, Canada and Pan-American countries. Other foreign countries $3.15 per year. Foreign subscriptions and sales should be remitted by International money order in U. S. Funds payable at Greenwich, Conn. Advertising forms close fifth of second month preceding date of issue.

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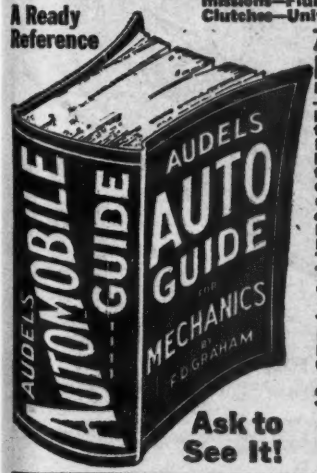

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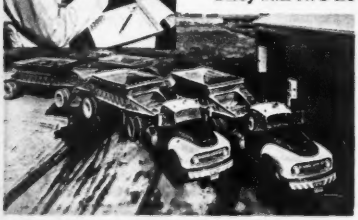

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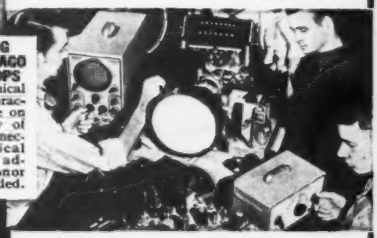

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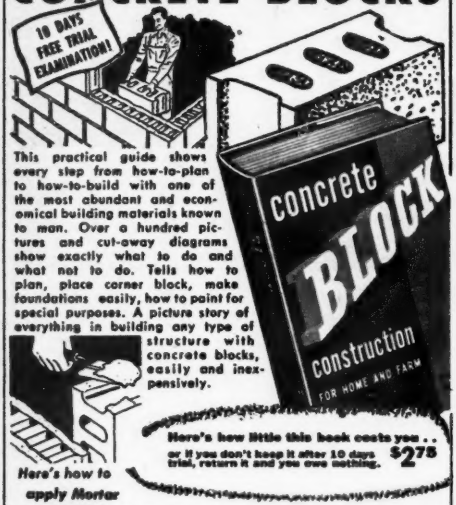

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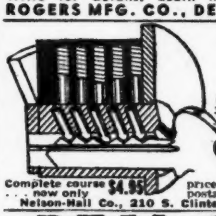

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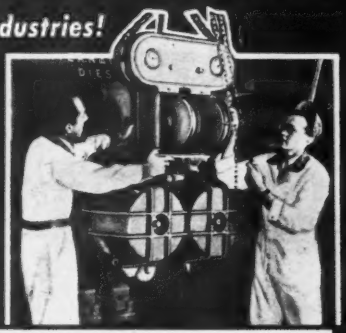

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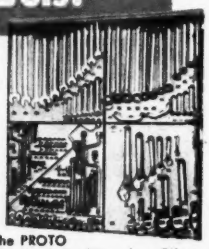

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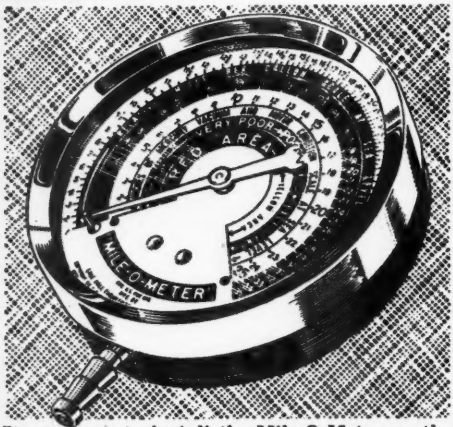

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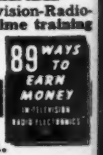

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● *Let's Make It Clear*

Did you ever walk into a hardware store and say to the man, "Look, I want one of those—you know what I mean, one of those doowhackies that's shaped like this—"? And you start measuring fish, the way Harry Truman used to do when he was committing a speech. But no voltage registers on the salesman's dial so you add, "You use it for—" and here you make with the real queer hand motions, like a jet pilot explaining how he got his first MiG. You ever do that? You did? Well, step in a little closer, brother, and let's cut up a gripe.

Why did you do it? You knew what you wanted. And you knew what it looked like. And what it was used for. But you couldn't remember the name. Why not? Because probably it had a name like Semi-automatic Compensating Farbenstrudle, Model 54K—and who could remember a name like that, except maybe Old Lady Farbenstrudle.

Or take it back a little further, to the innocent days when you don't know a coping saw from left field. You crave to assemble a few boards into something or other and you need some nails—about this long. So you up to the man in the store and you say, "Gimme some nails—about this long." He shoots you that you-are-a-jerk look and he says, "Six penny? Seven penny? Eight penny?" and you just stand there with your tongue frozen stiff because you thought this was a hardware store, not a bank.

Or remember the first time you wanted to buy some sandpaper. Just ordinary old sandpaper. For sandpapering. Not too rough, not too smooth. Just about medium-rare. But the man says, "Come, come, boy—you want number one grit? Or one-O? Or double-O? What you want, huh? Speak up." (Maybe he doesn't say it quite so caustic but anyway. . .)

But anyway, what I am trying to get at is this: we are in the beginning of a do-it-yourself boom that is getting real colossal. People who never before showed evidence of enough mechanical ability to replace a burned-out light bulb have all a-sudden gone crazy mad for the workbench, the paint brush, the wallpaper paste pot. They are running out and buying a lot of stuff they never heard of before and they are in many cases coming up against a new language, the trade jargon that makes lots of sense to professional carpenters and paperhangers and painters but means strictly nothing to Mr. I. Wannadoit Myself. Like this crazy "penny" business. Nobody knows for sure where or when it started—and nobody cares. But the poor slob who wants some ordinary flathead nails, two inches long, likely as not will get this "Oh, you mean six-penny common" nonsense when he goes nail buying.

Designating sandpaper grit sizes by numbers that the ordinary guy doesn't remember is another peeve of mine and I am happy to note that the folks who make Imperial Flint paper have now reduced their number of grits from ten to five and are calling them very coarse, coarse, medium, fine and very fine, rather than the previous memory-twisters of 3 and 2½, 2 and 1½, 1 and ½, 1/0 and 2/0, 3/0 and 4/0. Sensible, huh?

Nobody likes to be made to feel he's an ignoramus just because he doesn't happen to be familiar with certain obscure words and phrases, well known though they may be to the boys in the trade. Photography didn't get off the ground as a hobby until the brains at Eastman Kodak started making the Box Brownie, a camera so simple that anybody could take pictures with it. And photography would be even more popular, I believe, if they would substitute a more logical, easier-to-remember system of numbering f-stops for the Chinese chop suey arrangement they have now, in which 8 is half the size of 11 and 32 is much smaller than either.

Anyway, I predict that from here on in the lumber yards and hardware stores and paint shops are going to be more and more jammed with enthusiastic but technically illiterate amateurs who know what they want but don't know how to ask for it. And I think that the manufacturers will do everybody a favor, including themselves, if they'll scrap all this eight-penny, double-O grit talk and put it into a language everybody can understand.

Until the Parker Plan goes into effect, there's no reason to be flummoxed because you don't know the catalog name for the item you want to buy. Just walk right up to the man and say, "Look, I want one of those—you know what I mean, one of those doowhackies that's shaped like—"

See you here next month.—*Bill Parker* •

$15.20 an hour!

This is the average earning reported by Presto salesman WILLIAM F. WYDALLIS. "The sky's the limit" on Presto profits because of America's serious need for this new fire extinguishing discovery.

WOULDN'T YOU like to be making the kind of money William F. Wydallis is making? His story (printed at right) is just one example of the brilliant success that Presto salesmen are meeting everywhere! A Florida salesman earned $600 in one month. An Ohio man earned $2100 in 2 months. A New York salesman earned $1500 in one month. A New Hampshire salesman added the Presto as a *sideline* and picked up an extra $1800 in 20 months.

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PRESTO contains an amazing new chemical "Chlorobromomethane" or "C.B." developed as a secret defense against fire during the war.

In comparing the effectiveness of "C.B." in fighting various kinds of fires an authoritative testing laboratory states: "It has been proved that *'C.B.' is about 1.5 to 6 times as effective as other common extinguishing agents on an equal weight basis.*"

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WILLIAM F. WYDALLIS

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—William F. Wydallis
Van Wert, Ohio

CHARLES KAMA

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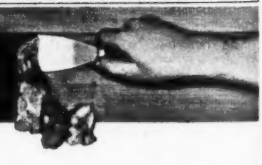

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A patent gives the inventor the exclusive right to prevent others from making, using, or selling the invention claimed in the patent for a period of seventeen years.

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A specially prepared booklet entitled "Patent Guide for the Inventor", containing detailed information with respect to patent protection and procedure, together with a "Record of Invention" form will be promptly forwarded to you without obligation upon request.

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Invention Clinic

JOSEPH H. KRAUS

Home Heating Systems

WITH all the gadgets which have been added to home heating systems and to conversions from coal to gas or oil, it seems strange that none has been designed by manufacturers or inventors to utilize fully the heat which is readily available but vanishes up the chimney.

By this statement we are not implying a study of the relative merits of the various systems for home heating. These are matters for discussion among heating engineers based on data from experimental evaluation by college and other research groups. It is for them to determine if the home may be heated more economically by hot air with forced air circulation, by the radiant system (pipes located under a concrete floor, in walls or ceiling) or by hot water or steam. Such records also may be used to determine the relative values of water or air circulators, cast iron radiators, copper convectors and the like.

Also, many a home can be heated with a great saving of fuel by utilizing some of the materials available for proper insulation. Or the home can be built entirely or mostly underground to derive heat insulation from the earth without too much expense.

While such details may be of importance to those who plan to remodel an old home or intend to build a new house, they need not concern the inventor who plans to work out an improved home heating system.

The desire is to develop some sort of a unit to reduce or eliminate the loss of heat which occurs in the chimney. In more than 33 years of examining inventions and proposals, this writer has seen only a gas-fired heater which was claimed to utilize every bit of heat available. It was said that during its operation the flue pipe remained so cold that a fan was essential to discharge the spent gases. This invention was not viewed in operation. The findings are mentioned here purely for the purpose of giving the reader an idea of the great field which demands study and exploration.

Heat going up a chimney is wasted. Yet it may not be good practice to reduce the temperature to the point where the flue no longer "draws." As long as there is a temperature difference between the gases in the chimney and the surrounding air, convection currents will carry the lighter gases up the flue. It may well be that the cost of operating a booster fan to do this is considerably greater than to perform the operation directly by natural causes. Or it may be that the forced air supply, such as that given by oil and gas burners or coal burning blowers, can be augmented sufficiently to furnish added scavenging air currents.

The study is open to the inventor in his own cellar. He can check the heating system to determine if the pipe leading to the chimney gets so hot that an egg can be fried on it. Can his hand be rested on it without getting burned?

The question is what can be done about it. The answer should be in a form that can be adapted easily to existing heating systems regardless of whether they are hot air, water or steam. A complete redesign of the system is not the sort of thing toward which to aim. Admittedly, great advances even here are needed but the inventor should aim toward a modifying attachment, not an entirely new furnace or heating method.

This is not a question of efficiency of combustion within the furnace itself. For this the average inventor does not have adequate testing facilities. The heat is there in the pipe leading to the outdoors. This is the energy to utilize to its fullest extent.

Examination of the records at the U. S. Patent Office would seem to show that here is a wide-open field for the inventor. Most of the inventions relate to modifications of heat-

[*Continued on page 22*]

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for patent.

Unless you are fully familiar with the U. S. Patent Laws, we recommend that you engage the services of a Registered Patent Attorney to protect your interests. The patent laws are *your* laws. A patent gives you the right to prevent others from making, using or selling the invention claimed in your patent for a period of 17 years.

Use these patent laws for your protection. Investigate whether your invention can be patented. If you have what you believe to be an invention, we suggest that you have this firm make a search for you.

Send for a copy of our Patent Booklet entitled "How To Protect Your Invention," containing information about patent protection and patent procedure. Along with this we will also send you an "Invention Record" form, for your use in writing down and sketching details of your invention. We will mail them promptly. No obligation. They are yours for the asking.

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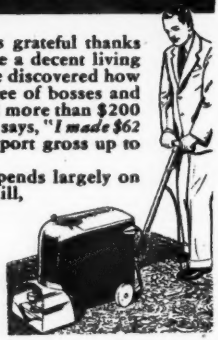

• Mr. Lockin expresses his grateful thanks for the opportunity to make a decent living on his own. Many men have discovered how to be independent, to be free of bosses and layoffs. L. A. Eagles grossed more than $200 his first week. R. E. Traynor says, "*I made $62 gross in one day.*" Others report gross up to $12,000 per year.

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650x16(6)	6.16	710x15	5.66	750x17	11.06	825x20	18.16
700x16	6.06	760x15	6.46	750x15	12.06	900x20	17.26
750x16(6)	6.96	800x15	6.46	825x15	10.06	1000x20	17.86
550x18	6.16	820x15	6.46	600x20	8.86	1100x20	20.06
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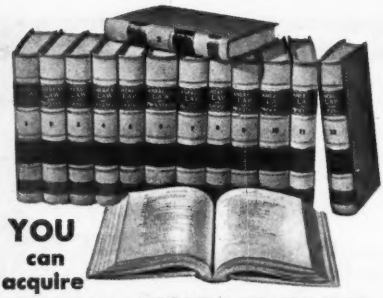

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[*Continued from page* 18]

ing systems. One such was patented in 1878 by J. D. Willoughby in which steam was to drive water to a reservoir located at the highest point in the home from which the water was to return to the boiler by gravity.

Compressed air was to be utilized to drive steam through pipes in the system patented in 1893 by M. F. Lancrenon.

This was soon followed by a number of grants covering various vacuum and intermittent systems. In the latter the steam was shot in spurts into the system sometimes to return by gravity as in the issue protected in 1902 by Lucien Kioff of Russia.

An apparatus which "operates on the principle of the ordinary test tube used in chemical experiments by means of which a fluid substance may be heated almost instantly for the reason that but a very small portion of its contents are at one time subjected to the calorific influence of the heating medium employed," was covered by patent in 1910 granted to Benjamin F. Seymore of Denver, Colorado. The following year he patented a system to apply electrical heating units to obtain a similar result.

A method somewhat akin to a coffee percolator was protected in 1935. In this a small quantity of water was heated quickly and driven in spurts through the pipes. Most inventors know, however, that the temperature of the water during the first spurts of a coffee percolator is not very high.

[*Continued on page* 24]

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[*Continued from page 22*]

This selection of patents would tend to show that many inventors were concerned with the idea of getting the heat to the rooms as quickly as possible. Forced air circulators or rotary water pumps are the modern methods for accomplishing this. Vacuum systems for steam installations serve to give greater coverage and also speed heat to the radiators.

It is not likely that a quick and ready answer will be forthcoming. Neither will it be an easy matter to prove that any system developed represents the best way to do the job. Yet the chances are good that if the inventor will hit upon some way to convert the heat lost to a practical, useful form without interfering with the operation of the furnace itself, he will be on the right track.

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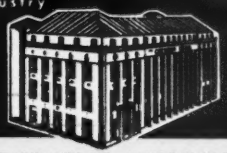

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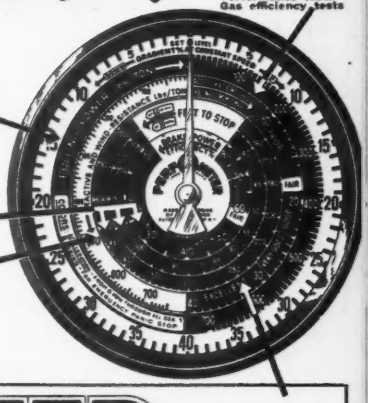

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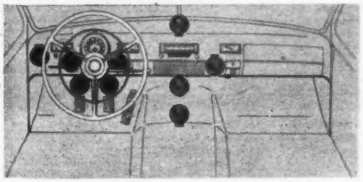

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DOES YOUR TV SET HAVE TO COST YOU FROM $25—$90 A YEAR FOR REPAIRS?

Not if you know a few simple things about your television set . . . not if you know when you really need a serviceman . . .

and when your trouble can be corrected with a minor, simple, safe adjustment you can make yourself . . .

You've seen a serviceman come in to work on your set. He taps this and twists that. Then he either replaces a tube, or makes an adjustment on a part. All he has to do is recognize and locate the trouble, and then make the correction.

You don't have to be a mechanical genius to be able to make many of these same adjustments on your set yourself. If you have ever put a new washer on your water faucet, or changed a tire on your automobile, or attached a new plug to an electric cord—you have enough "mechanical background" to be able to take care of all "nuisance repairs" yourself, and probably of most other things that go wrong with a set.

Amazing New TV Owner's Self Repair Book Takes the Mystery Out of TV Repairs

With the amazing new TV Owner's Self Repair Book, you can have a television expert at your side whenever you need it. Now, every time your set begins to flicker or jump, or becomes distorted or dissolved into lines or zags—a flick of the finger to the right page **SHOWS YOU EXACTLY WHAT CONTROL** knob to turn to correct the trouble in less than one minute! From now on, every time you're annoyed by "ghosts," snow or weak channel reception—the TV Owner's Self Repair Book shows you how to effect a quick 15-minute repair job that eliminates these faults and restores the set to perfect, movie-clear reception.

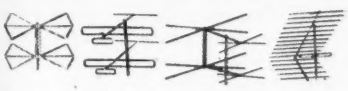
IT HAS BEEN PROVEN THAT 1 OUT OF EVERY 3 TV FAULTS IS CAUSED BY A WEAK OR BURNT OUT TUBE. Just by replacing a tube you can correct fully 33⅓% of the troubles that may develop in a set. The TV Owner's Self Repair Book shows you how to safely locate and change the bad tube in less than 5 minutes.

Contains special tube diagrams that spot faulty tubes immediately . . . a complete section on antennas . . . interference . . . covers T.V. set models from 1947-1952 . . . all makes . . . all sizes.

When you check your trouble and find that it is due to a faulty tube, you are led right to it. You simply find the diagram for your set and the one (or more) tubes you are to check—and **THE ONE TO REPLACE** are pinpointed for you! You are directed right to it. No blind guessing or hunting for the bad tube. **ONLY IN THIS BOOK,** has there been developed a special identification method to make it a cinch to locate the bad tube. Each tube in each diagram not only carries its usual trade identification number, but also a special letter to identify its function and location as well. It's (1) find the trouble, (2) find the tube, bingo, (3) replace the tube—and that's all there is to it!

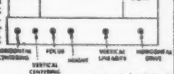
Which Type of Antenna Is Best for Your Set

The special chapter on antennas explains what an antenna is supposed to do; the reason for the different shapes and arrangements; the reason for "stacking" and multiple antennas; how to "orient" an antenna for best reception; the need and use of a "rotator"; the special antennas for "fringe" areas; how to install, change or add antennas and parts; information on complete antenna installation kits which are available. Just about everything practical that you need to know about antennas.



Do This Right Now and Prove You Can FIX TV TROUBLES YOURSELF

Turn your set around. You will find in the back of it an arrangement of "rear controls" looking like this:



Zags on Your Screen

Now, if you are troubled with these zags on your screen, locate Hor. Syn. on the above rear panel. Turn control slowly to right. Zags will appear even stronger. Turn control slowly back to left. Zags will disappear and you will have a perfect picture on your screen. That's all there is to it. You have made a $5 repair in less than 5 minutes.

A few other repairs that you can make yourself without tools, without any special knowledge, just with the help of this new TV Owner's Self Repair Book.

Picture Weak, Gray, Lacking in Contrast.

Sound and Picture Not in Step, Sound Not Good When Picture is Best.

Picture Not High Enough to Fill Screen Top to Bottom.

Jumpy Picture

Dark Fuzzy Picture

No Picture, Sound Okay

6 Easy Ways to Eliminate Interference

In the TV Owner's Self Repair Book there is a unique chapter devoted just to elimination of interference. This chapter tells you just what "interference" actually is. It describes and illustrates the interference symptoms or patterns which appear on your screen in the form of diagonal lines, vertical lines, herringbone or hyphens all over the screen, etc. **This chapter gives you the easy ways to eliminate interference, doing it yourself in a few minutes.**

Complete Price Lists of All Tubes

The TV Owner's Self Repair Book contains a full listing of every tube used in TV sets, fully identified with number, and also listing of picture tubes and with the fair retail prices (by the way, prices range from $1.10 for a 5YEGT tube to $6.60 for a 6CDG tube and up to $101.00 for a 24 inch picture tube, 24BF4). A full listing, also, of standard and reasonable charges for every type of television service and repair job. No longer need you be in the dark when it comes to knowing what a job should cost. Now you can make your own minor repairs and in addition know just how expensive "Expensive" repairs should really be.

Never Before Such a Complete, Authoritative Book for So Little Money!

It contains chapters devoted to GETTING ACQUAINTED WITH YOUR TV SET, telling you how the set is put together, how to understand the controls, how to operate the set, why a "test" pattern is needed—and HOW A TV SET WORKS, telling you how pictures and sound are broadcast and received. Included in the broad scope of this book, is complete information on HOW TO DIAGNOSE TROUBLES IN YOUR TV SET, telling you how to spot faults due to poor adjustment, faults due to wear and breakdown of tubes and parts, faults due to outside causes including extreme distance from telecasting center; also HOW TO CURE YOUR TROUBLES IN THE SET, telling you with pictures and descriptions just how to go about replacing tubes, parts, HOW TO MAKE VARIOUS ADJUSTMENTS and how to do all this without the slightest danger to yourself or to your set! There is also a special chapter devoted to television accessories, such as boosters, what they do. Interference, Traps, Glare Filters, Antenna Couplers, which means a master antenna system which permits the operation of two sets from a single antenna, and much, much more.

Unconditional Money Back Guarantee!

Let us send you a copy of this TV Owner's Self Repair Book. Look at it, go through it, read the general information it offers on how a TV set works. Use it to adjust the controls on your set to 100% perfection. Use it, above all, in making your next "fix-it" job on your set. Then—if you don't think that it is the best book of its kind on the market, that it will save you up to a possible $300 on repairs and adjustments on your set during its life, return it to us. We'll promptly send your money back. You must be satisfied 100% or it costs you nothing to examine and try the book—in your home on your set. What could be fairer? But send for the book now and enjoy the best television reception from your set right away!

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Down To The Sea In Bathtubs

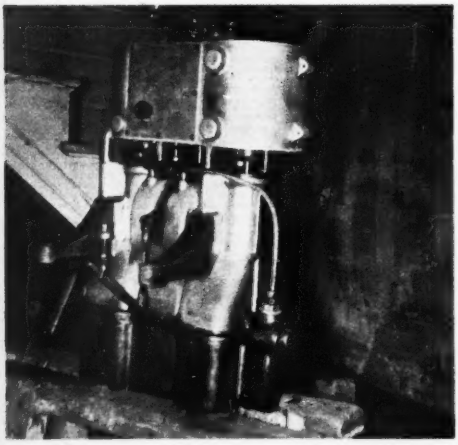
In your story Down To The Sea In Ships (January 1953, page 72) you make a big fuss about that guy who went to sea in a 50-year-old bathtub. What's so hot about that—those old bathtubs were really built for wear. I'd like to see him do it in a squat, *new* bathtub.

Jonathan J. Greentar
Brooklyn, N. Y.

With or without the stopper in?

Steam Identification

Here's a photo of a two-cylinder automotive-type steam engine. I've had this engine for several years and I'm interested in finding out what make and year it is. Can anybody help?



S. A. Miles
Portland, Ore.

Whaddya Want In MI?

I'd like to see a roundup of science news in MI every month.

Jayson King
Chicago, Ill.

How about trying to run some science fiction for us nuts?

Allan G. Leoli
San Francisco, Calif.

Why doesn't MI print more pictures of pretty girls with gadgets.

Sean O'Hara Masochraw
Oklahoma City, Okla.

The Big Deep Freeze

I have a great idea that scientists keep rejecting.

Why not put all people who are sick of incurable diseases into a deep freeze? Then, file them away until a cure has been discovered, unfreeze them, cure them and send them on their way.

It sure would solve a lot of problems.

Lee Young Chen
Los Angeles, Calif.

Sure would. Might create some new ones, though. Like where to find the first volunteer for the Great Idea.

January Mystery Solved

Marcus Ferrule's mystery missionary (MI Mystery, Dear Editor, January 1953, pg. 33) had only to say to the savages, "I shall be burned alive."

If this statement were adjudged true, the natives would be obliged to shoot him, thereby making the statement false. In which case, the savages would be obliged to burn him and so on ad infinitum.

Malcolm A. Fults
Altamont, Tenn.

Right. Of course the missionary might also have said, "I shall not be shot with a poisoned arrow." Hundreds of MI readers got it right, though. Because there seems to be so much interest in these little brain teasers, we plan to run them regularly in this column —at least till you yell Stop.

March Monthly Mystery

Two men applied for the same job. They gave the same family name, were in the same immediate family, were born on the same day, month and year. But, they were not twins. How did they explain it?

Ronald R. Walker
Pennsylvania State College

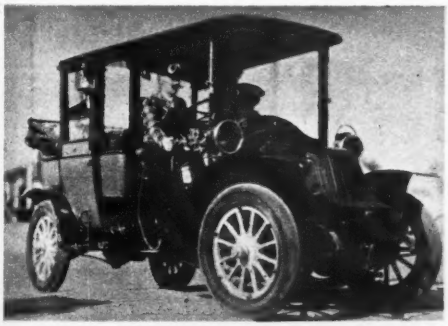
New War For Science?

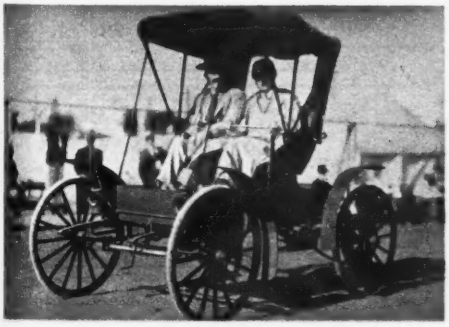
In The World War That Never Ends (January 1953, page 64) you describe, in glowing terms, the fight that science is making against disease. That's all very well and it's fine to war against illness. But how about turning the efforts of science toward the world's greatest disease—war. Why not a war against war!

John Jameson Alican
Boston, Mass.

Old Car Contest—No Prizes

Enclosed are two pictures from my collection of old car snapshots, I can't identify them





and I would certainly appreciate help.

Don Shearer
Rochester, N. Y.

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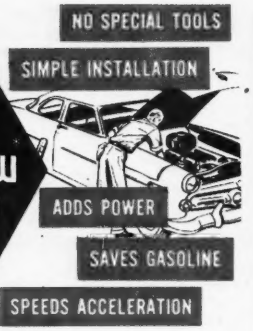

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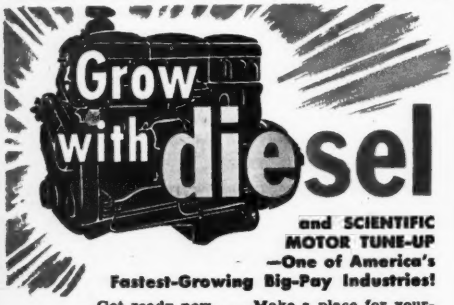

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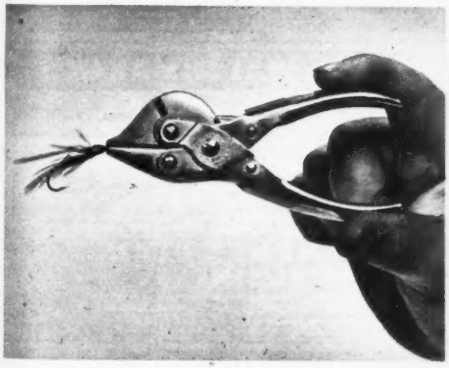

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[*Continued on page* 44]

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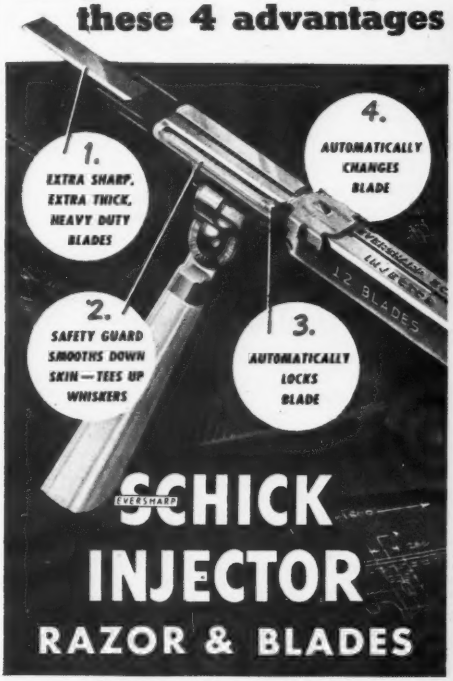

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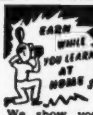

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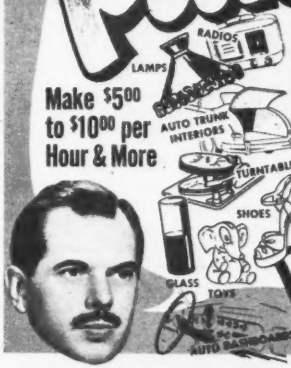

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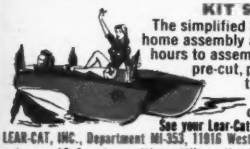

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continued from page 33

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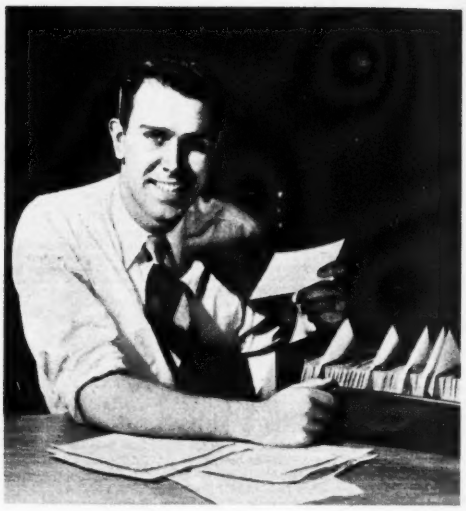

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Dear Mr. Brandell: Please send information showing how I can start a profitable manufacturing business in my home in spare time. All the information you send will be mailed to me free of charge and no salesman is to call on me. I am not under any obligation to go ahead with the business and there is no charge for this information now or any other time.

Name_____

Address_____

City_____ Zone____ State____

Classified Ads

Your advertisement can reach this mail-buying audience of multi-million readers for only 80c per word . . . payable in advance . . . minimum 10 words. Copy to be inserted in May issue must be in the office March 3. Mail to MECHANIX ILLUSTRATED, 67 West 44th Street, New York 36, N. Y. Word count: Zone number free. Figure one word: Name of state (New Jersey); name of city (New York); sets of characters as in key (14-D); also abbreviations as 35MM, 8x10, D.C., A.C.

SAVE MONEY • ORDER BY MAIL

• • • ADVERTISING SERVICE & AGENCIES

$10,800 PROFITS! YOUR Own Mailorder Business! No capital risk! "Success Plan" (worth $2) free! Write today! Treasury, 149 Storer, New Rochelle 15-X, N. Y.

SATISFACTION-GUARANTEED SALES Letters. Creative. Forceful. Walt Jenkins, Perryopolis, Penna.

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BUY WHOLESALE—25,000 items—Catalogue 25c. Matthews, 1472-D6 Broadway, N. Y. C. 36.

NEED EXTRA Money? Show your friends Wonderful Regal line of All-Occasion Greeting Cards. Over 100 beautiful assortments to choose from. Also Exclusive Stationery unobtainable elsewhere. No experience necessary. Your profit up to 100% plus bonus. Write for free samples. Sales kit on approval. Regal Greeting Card Co., Dept. 111, Ferndale, Mich.

BIG PROFITS Selling Ties. ($2.00 values), $6.50 dozen. Free catalog. Empire Cravats, 648B Broadway, New York 12.

MAKE $50 OR More Fast with sensational greeting card line. Big value All-Occasion Box Assortments, Birthday, Easter, Secret Pal, Religious Cards. Wrappings, Stationery. Unusual Gifts and Gadgets. Amazing profits. Bonus. Experience unnecessary. Write now without risk for samples on approval and selling plans. Hedenkamp, 361 Broadway, Dept. MI-23, New York.

NEW "SPONGE" Wall Cleaner. Erases dirt like magic. Wallpaper, painted walls, ceilings. Saves redecorating. Lightning seller. Samples sent on trial. Kristee 158, Akron, Ohio.

ABSOLUTELY FREE—Sales Kit. Sell personal initialed buckles with belts, cap badges, tie clasps, etc. Choose from 3000 emblems. Hook-Fast, Box 1425MI, Providence, R. I.

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EXCELLENT SIDELINE for printing and advertising salesmen. Decalcomania name plates in small quantities. Great demand. Also, make money with our line of Automobile Initials and Sign Letters. Free Samples. "Ralco." XL-Roxbury, Boston 19, Mass.

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SELL MIRACLE Orlon Embroidered Work Uniforms! Looks, feels, tailors like wool; wears 3 times longer. Outwears cotton 5 to 1. Acid-proof, grease-resistant. Washes perfectly pressed. Amazing profits! Outfit Free. Topps, Dept. 483, Rochester, Ind.

ABSOLUTELY FREE, yours for the asking. Send postcard today requesting free sales kit showing complete new line, belt buckles with your name or personal initials, cap badges, 3000 different emblems also uniforms, caps, shirts, ties, wallets, etc. Write Hook-Fast Company, Box 480MI Roanoke, Va.

EXTRA MONEY Every Week. I'll send you full-size Blair household products. Show them to friends and neighbors. You can make Big Extra Profits. Write Blair, Dept. 65LC, Lynchburg, Va.

SELL BIG Money Maker to Men and Women. Easy handwork makes fast-selling useful articles. Sample free. Sunmade Company, Brockton 64, Mass.

EXTRA MONEY! Make up to 100% profit selling amazing value All Occasion greeting cards, gift wrappings, gifts. Bonus. Surprise offers. Experience unnecessary. Write for Feature samples on approval, free samples exclusive Name Imprinted Stationery, Napkins, free Catalog and Selling Guide. New England Art Publishers, North Abington 811-B, Mass.

CAN YOU Use $60.00 Extra Per Week? Show amazing cushion comfort shoes. Commissions to $4.00 pair plus Cash Bonus. Experience unnecessary. Write for Free Catalog, full information. Tanners Shoes, 272 Boston, Mass.

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OPERATE "ESCOLATOR" Mailorder System, selling our products or any products. Fastest, most revolutionary mail-order system known. Write: Selbyco, Decatur 130, Ill.

BOOK "505 ODD, Successful Businesses" free. Work home! Expect "Odd"!! Pacific-21C, Oceanside, Calif.

FREE BOOKLET reveals amazing secrets behind 301 unique, profitable enterprises! Start spare time. Home! Deumant Publications, 81-GG Deumant, Kenmore 23, N. Y.

BUY WHOLESALE thousands nationally advertised products at big discount. Free "Wholesale Plan." American Buyers, 629-MI Linden, Buffalo, N. Y.

AT LAST! Something New And Sensational In Everyday Cards, 21 for $1. Make Extra Money Fast! Show Satin, Velour, Metallic Cards. Get orders easy. Big line $1 Assortments, Scented Stationery, Personal Matches, Kiddie Books. Imprints Free. Three $1 boxes On Approval. Puro Co., 2801 Locust, Dept. 364-C, St. Louis 3, Mo.

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POSITIVELY MAKE $50.00 a day and up selling brand new item going to every type of Food and Beverage Store, Factories, Laboratories, Hospitals, etc. Samples Furnished. Utility Durawear, 53 West Jackson Blvd., Dept. MI-3, Chicago 4, Ill.

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ANYONE CAN Sell Hoover DuPont Nylon Uniforms for beauty shops, waitresses, doctors, nurses, others. In white and colors. Exclusive styles. Top quality. Low priced. Exceptional income. Real future. Equipment free. Write fully. Hoover, Dept. K-102, New York 11, N. Y.

MAKE MONEY with fast-selling Bostonian Shirts. Blouses too. Spare time, full time. Sales Kit Free. Bostonian, 89 Bickford, Dept. U-12, Boston 30, Mass.

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RECAST OLD batteries into new. Latest Achievements. Battery Laboratories, Minneapolis.

137 PLANS FOR starting home business. Details: Elite Co., 220-G Grand St., New York 13.

RICHES IN Mail Order. Big money facts free. Write How, Box 684-C, St. Louis, Mo.

BOOKKEEPERS, INCREASE earnings operating sensational bookkeeping service. C. P. A. system. Kern. 4942-C Vineland, North Hollywood, Calif.

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EXTRA MONEY—No Selling—operate vendors. Amazing profits, details Free. Silver King, Suite 222, 622 Diversey, Chicago 14.

NEW $$$$$ FABULOUS Home-Business "Jewelize" Finish. Free Sample. Free $$$$$ Plan. Pearl-Art, 7126-D Bear, Bell, Calif.

BOOK "505 ODD, Successful Businesses" free. Work home! Expect something Odd! Pacific-23C, Oceanside, Calif.

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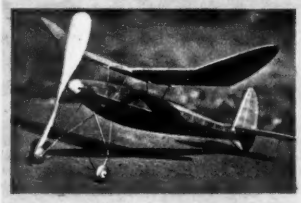

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START BUSINESS Without Capital! Reliance, 15-F Park Row, New York 38, N. Y.

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MAKE $6.73 EVERY Time. You sell one—and they're amazingly easy to sell! We have new Adding Machines in original factory cartons you can sell* for only $14.95 and you make 45%. They're executive model portables, precision built with automatic clearance, direct subtraction, fully guaranteed. Send for life size color photo with full details. Write today to Lightning Adding Machine Co., Inc., Dept. MI-7, 1260 West Second Street, L. A. 26, Calif.

"MAKE PERFUME" Catalogue Free—"International," 6347 Parnell-MI-3, Chicago 21, Ill.

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$15.00 THOUSAND, HIGHEST prices addressing envelopes at home—longhand, typewriter. Torrey, A-9, Melrose 76, Mass.

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EARTHWORM BREEDING? First, get unusual story, "An Earthworm Turned His Life." Free. Earthmaster, Dept. 4, El Monte, Calif.

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TO $35.00 WEEKLY. Spare time, home operated mailorder business. Successful "Beginner's" plan. Everything supplied. Lynn, 10420-X National, Los Angeles 34, Calif.

CLASSIFIED ADVERTISEMENTS

MAKE FLEXIBLE Molds! Cast plaques, bookends, figurines! Free sample! H. Tooker, 630-E Chestnut, Hamilton, Ohio.

INCOME FOR Local Information. No selling. Write Neherco, La Verne, Calif.

COLOR CONCRETE with chemicals. Marble-glaze cement benches, pottery, garden ornaments. Home—Shop. 10c brings sample, pictures. Hollywood Cementcraft, 8527-L Wonderland, Hollywood 46, Calif.

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BOOKKEEPERS! BIG Earnings. Operate Bookkeeping-Income Tax Service. Latest Amazingly Simplified Plans, $2.00. Tackett's, North High, Salem 5, Ind.

MAKE PERFUMES At Home. Write "Carey Laboratories," 1914 Chouteau MI-3 St. Louis 3, Mo.

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MAKE MONEY Evenings cutting wanted items from your newspaper for our publications. Torrey, C-5, Melrose 76, Mass.

SPECIALIZED MAGAZINES covering your field of interest help You to greater success. Get latest copies through our Easy-to-Get-Acquainted Service. Hundreds of business, trade, professional, educational, sport, hobby, gift, grocery, health, historical, horticulture, hospital, hotel, humor, insurance, jewelry and others covering All interests. Send for List today. It's Free. Commercial Engraving Publishing Company, 34W North Ritter, Indianapolis 19, Ind.

LIQUID RUBBER, make flexible molds. Free sample. Chaney, 1130 E. 16th St., Jacksonville 6, Fla.

RAISE PHEASANTS On $100 Week Plan. Little capital and space can make you independent. Free details. Great Central System, Columbus 16, Kans.

START YOUR own business, in your own home. Write L. Scheffler, P. O. Box 236, Hamburg, N. Y.

BUY IT Wholesale! Manufacturers, distributors offer 850,000 items. Literature free. Olsen, 1231-C East Third St., Duluth 5, Minn.

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$46 FROM SQUARE Foot Plywood; Jigsaw Necessary. Write: Woodarts, X-53, Bridgewater, Mass.

START A Buying Service, buy wholesale thousands nationally advertised products. Make big profits selling at sizeable discounts. Postcard brings details. American Buyers, 628-MI Linden, Buffalo, N. Y.

START YOUR own profitable home mail-order business! We supply everything. Write today! Studio Products, Box 564-E, Glendale 5, Calif.

FREE SAMPLES—Big profits showing amazing Glow-in-the-Dark specialties. House numbers, pictures, plastic novelties, ashtrays, keyholders, religious and nursery objects, etc. Madison Plastics, 303 Fourth Ave., New York 10, N. Y.

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FOREIGN EMPLOYMENT Construction men, building trades, helpers, office men, others, interested in Foreign Projects. High wages, quarters, transportation. Send $1 for Foreign Construction Compendium and Application Forms. Foreign Service Bureau, Dept. MI-3, Metuchen, N. J. (Not an employment agency—no fees.)

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HONOLULU HELP wanted columns, plantations list, application blanks, airmailed $1.10. Jackson's, #3 Campbell Block, Honolulu, Hawaii.

FOREIGN JOBS. Contracts underway and soon starting in Africa, South America, Canada, England, Europe, South Pacific, Middle East, Mexico and Alaska. Send $1.00 for foreign job news, information, application forms, etc. DCS Foreign Job News, Dept. 268-FJ, Bridgeport, Ill.

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WANT TO Make More Money? Have a real career with a lifetime of high salaries? I'll show you how to succeed in the growing automotive-diesel field. Write Ed Howes, Chief, Dept. 633, 4000 S. Figueroa St., Los Angeles 37. No obligation.

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NEWSPAPER CLIPPING Bureau! Instructions 25c. Schrader, 803 Wisconsin, Peoria 4, Ill.

HUGE PROFITS, Home Business. Assemble Rhinestone Jewelry. Catalog 20c. Start Today. Order Gorgeous Sample Kit $1.98. Completed Sells $6.50. House of Hobbies, Dept. C7, Evanston, Ill.

NEW PLASTIC Mending Tape. Just press on! Repairs clothing instantly. Lightning seller. Samples sent on trial. Kristee 177, Akron, Ohio.

SELL TITANIA Gems; $9.75 carat wholesale. More brilliant than diamonds. Free catalogue. Diamonite, 1404-X Mitchell, Oakland 1, Calif.

$10,800 PROFITS! YOUR Own Mailorder Business! No Capital Risk! "Success Plan" (worth $2) Free! Write today! Treasury, 149 Storer, New Rochelle MX-16, N. Y.

SCHOOL SENIORS—Earn sensational profits selling classmates America's most beautiful Graduation Name Cards. Largest Selection. Outsells all others. Free Sample Kit. Printcraft, Dept. 1, 1509 Maple St., Scranton 5, Penna.

DETECTIVES EARN Big Money. Experience unnecessary. Detective Particulars free. Write, George Wagoner, 125-J West 86th, New York 24.

VENDING MACHINES—No selling required. Send for Free 32-page illustrated catalog describing our numerous coin machines; also showing you how you can earn Amazing Profits either full or spare time. Parkway Machine Corporation, Dept. # 5, 715 Ensor St., Baltimore 2, Md.

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START YOUR Own Business On Credit. Your own boss. 1586 of our Dealers sold $5,000 to $27,500 in 1951. We supply stocks, equipment on credit. 200 home necessities. Sales experience unnecessary. Pleasant, profitable business backed by world-wide industry. Write Rawleigh's, Dept. C-U-MOM, Freeport, Ill.

TYPEWRITER OWNERS Make Handsome Profits. Get details today. Groves Company, 682 Hastings 1, Neb.

TIE-BREAKER PICTURE puzzles exposed, $2.00. Wenograde, Box 1495, Phila. 5, Penna.

WE PAY Cash For Boxtops, Labels, Wrappers, Coupons, Etc.!! Particulars free! Boxtops, 1211-MI Bryden, Columbus 5, Ohio.

EARN EXTRA Money! "Home Worker Magazine" shows how. Sample, 25c. Sizemore, Box 12, 4917 Kostner, Chicago 30.

FREE BOOKLET reveals amazing secrets behind 301 unique, profitable enterprises! Start spare time. Home! Deumant Publications, 83-GG Deumant, Kenmore 23, N. Y.

START A Buying Service, buy wholesale thousands nationally advertised products. Make big profits selling at sizeable discounts. Postcard brings details. American Buyers, 631-MI Linden, Buffalo, N. Y.

FREE BOOK "505 Odd, Successful Businesses." Work home! Expect something Odd! Pacific-22C, Oceanside, Calif.

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RUN YOUR Own Repeat-Order Shoe Business! 3 sales a day brings up to $63 or more a week Extra with fast-selling Consolidated Shoes! No experience or investment needed. Fit customers stores are unable to take care of. Special kinds of shoes for different occupations. Send postcard now for Free Selling Outfit! Consolidated Shoe System, Dept. CC16, Chippewa Falls, Wisc.

MAKE TOUGH, Durable Plastic—1c pound. Makes attractive flooring, plaster, stucco, built-ins. Build good home $150.00 room. Bays Laboratory, Oklahoma City 9.

DETECTIVES—MAKE Secret Investigations. Interesting occupation. Write, George Wagoner, 125-J West 86th, New York 24.

"HOW TO Make Money With Home Workshop" describes amazing methods used by hundreds of successful craftsmen. Tells what to make. How to sell workshop output spare time. Write at once for details. Craftsman, 115-B7 Worth Street, New York City.

$5000 FROM HALF acre growing Ginseng, crop bought, Particulars 10c. Associated Growers, Sperling, Manitoba.

WANT A Diesel Job? New Opportunities to increase income. Higher Pay. More Money. We can help you Qualify. Tools. Shop method home training. Write today! Diesel, Tractor, Heavy Equipment Division, Interstate Training Service, Dept. 4C, Portland 13, Ore.

GOOD MONEY In Weaving. Weave rugs at home for neighbors on $59.50 Union Loom. Thousands doing it. Booklet free. Union Looms, 22 Post St., Boonville, N. Y.

RAISE EARTHWORMS Backyard. $200. Monthly Possible! Illustrated booklet 25c. Ozark Worm Farm-E, Willow Springs, Mo.

THRILLING, PROFITABLE Home Business. Make fast-seller chenille monkey trees, dolls, flowers. Terrific holiday demand. Information free. Velva, Bohemia 14, N. Y.

$40.00 WEEKLY, MADE growing mushrooms, Fresh, Dried, Dominion Patent 331583. Free Spawn. North American, 169M Yonge, Toronto, Canada.

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BIG PROFITS Screen Printing Mottoes. Joe Jones, Box 321, Meridian, Miss.

GROW MUSHROOMS. Cellar, shed, and outdoors. Spare, full time, year round. We pay $3.50 Lb. We paid Babbitt $4,165 in few weeks. Free Book. Washington Mushroom Ind., Dept. 102, 2954 Admiral Way, Seattle, Wash.

FREE BOOKLET reveals amazing secrets behind 301 unique, profitable enterprises! Start spare time. Home! Deumant Publictaions, 85-GG Deumant, Kenmore 23, N. Y.

BUY WHOLESALE thousands nationally advertised products at big discount. Free "Wholesale Plan." American Buyers, 627-MI Linden, Buffalo, N. Y.

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MEN-WOMEN—"EVERYBODY Likes Candy." Learn to make professionally. (Our 43rd year.) Ragsdale Candies, D3, East Orange, N. J.

• • • CHEMICALS & SUPPLIES

LABORATORY APPARATUS, Chemicals, Microscopes, Complete Chemistry Sets, Minerals, Uranium Ore. 10c brings catalog. Porter Chemical Company, Hagerstown 3, Md.

CHEMICAL SUPPLIES, New Catalog 15c, refundable. Laboratory Sales, Box 161-C, Brighton, Mass.

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LABORATORY TESTED Formulas. Lists Free. Pont Chemical Company, Terre Haute 3, Ind.

CHEMICAL FORMULARY—9 volume authority, $7.50 any volume. Book—10,000 formulas, $3.98. Engineering Handbooks. Literature. Paullin, 109MC, Loudonville, Ohio.

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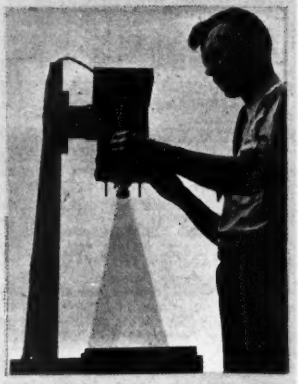

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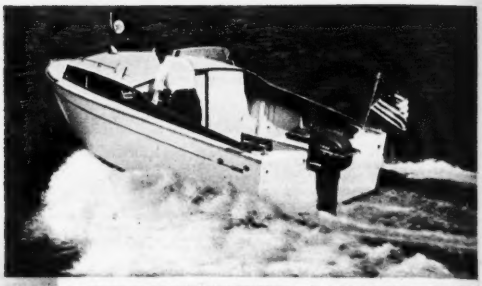
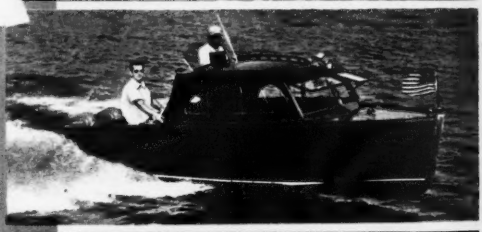
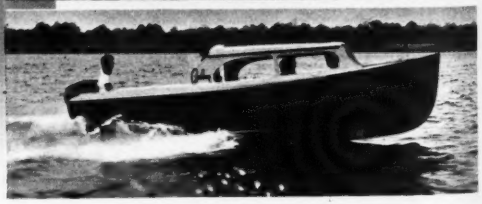
BIG TWIN *by* EVINRUDE







● This is the motor that's "made for" outboard cruisers . . . the motor that started the wave of cruiser building from coast to coast! Here's the one that delivers *real* power for the job . . . brawny, high-spirited power that puts a thrilling bonus of speed into comfortable cruisers like these. Here's *flexible* power, superbly smooth from "wide open" right down to a drifting troll. Here's *new handling ease* . . . Gearshift with Neutral, Forward, Reverse . . . and Roto-Matic speed control. Here's new perfection of *remote control* . . . for '53 the Big Twin is *engineered* for quick (30 seconds) application of remote controls . . . with Evinrude's new Simplex Remote Controls available at new low cost! Write today for free full-color catalog of the complete Evinrude line.

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In Canada: Manufactured by Evinrude Motors, Peterborough, Ont.

In the Salted Mine Swindle, the gyp sprays the bonded assayer's ore samples with solution containing the precious metal so analysis will be positive.

The Con Men Will Get You...

If you don't watch out, they'll take you for another $2½ billion the same way they did in 1952.

ROBERT Murphy was tired and so were his haggard-looking wife and two children who walked behind him on the highway near Pottstown, Pa. The woman who gave the family a lift listened to Murphy's sad tale with a sympathetic ear. Why not? The Murphys lost everything they owned in the great Kansas flood of 1951. They had walked all the way from the disaster scene—1,400 miles—in search of relatives who might be able to help them.

Next thing he knew, Murphy

By Harry Kursh

was telling his tragic story over WPAZ, the local radio station in Pottstown. Money and gifts poured in from all over the nation as Americans came through with traditional generosity. And all's well that ends well!

Only this time it did not end too well for Murphy. There were some gaps in his story. Then when he declined to let photographers take his picture, someone did a little investigating. You guessed it! He was a complete phony.

Murphy was not his real name. He never walked from Kansas. He had pulled a similar hoax before in Newark, N. J., based on a story that all his possessions had been lost when a fire destroyed his home in Baltimore. Luckily he was nabbed in time and all the gifts and money he had received were turned over to charity.

Most Americans, unfortunately, are too gullible. According to authoritative estimates, the nation today is being taken for a sucker's bill of more than $2,500,000,000 a year in what has been termed the greatest plague of phonies since the professional con man gave up wearing a gaudy checkered vest and stopped peddling the Brooklyn Bridge to out-of-town rubes.

But they seem to work on a new and simpler principle. It goes something like this: these are good times and lots of people have money they've never had before. So just make believe you're somebody else, then cash in.

A few months ago, a Bronx court sentenced 53-year-old William Barber up

Operator of Song Publishing Racket takes about $500 to print a sucker's song, make a recording. His expenses are $5; he pockets the rest: $495.

Gasoline Fraud: Plastic bag is inserted in tank which is too empty to feed engine. When tablet, water are added, gas level rises, engine runs.

Moneymaker is one of the oldest but still works. Blank paper and a chemical turn mysteriously into greenbacks — with some sleight-of-hand.

Pix posed by CBS-TV Racket Squad cast.

to three years in the penitentiary. First Barber posed as a hospital orderly and then as a State Senator from Connecticut. He succeeded in bilking two women for $6,500.

In Omaha the FBI nabbed a man who had been circulating as an Army colonel in charge of local recruiting. The "colonel" got nine victims to turn over more than $1,000 to him for pre-induction drills.

Not long ago, when San Diego was having water-shortage trouble, a well-dressed man stopped a housewife from doing her wash on a Wednesday. That was illegal, he told her. It was a ruling of "The Save-Our-Water Committee." There never was such a ban, nor was there ever such a committee. But he talked her into paying him a $5 fine.

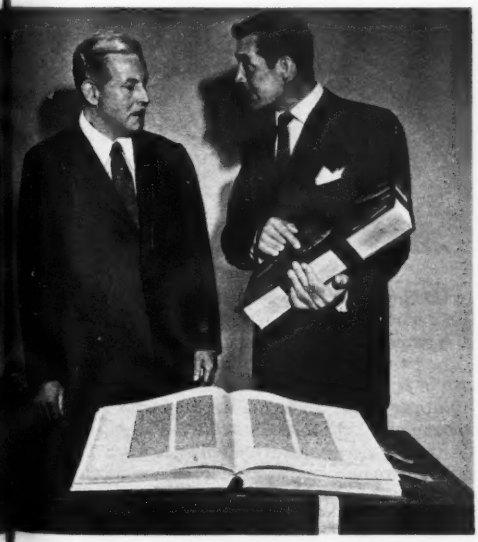
One man from Texas posing as a GI made a nice living off radio quiz programs all over the country. In an Army sergeant's uniform that virtually bristled with an impressive array of multi-colored ribbons, he had just taken $50 from a quiz program in New York when the FBI finally caught up with him last May. In fact, his stories of heroism aroused so much admiration that he was enjoying free room and board with a family in Flushing, N. Y. at the time he was picked up.

If anyone has ever pulled the wool over your eyes, don't feel ashamed. The phonies are so clever they manage to hoodwink many people who should know better. In September, 1950, for instance, 33-year-old Vincent J. Daly applied for a staff position as a psychologist at the State Mental Hospital in Jackson, Miss. Daly had been an interne for a year at a psychiatric hospital in Michigan and had been on the staff at a hospital in Hunting, W. Va. He even taught at two different state medical schools. He produced diplomas from Oxford University and from a famous school in Berne, Switzerland.

Of course Daly got the job. He became chief clinical psychologist. It was almost 18 months later that the hospital's director discovered Daly's only experience as a psychologist was a single GI course he took in the Army during World War II. His diplomas were forged.

Oddly enough, when he was kicked out of the hospital there was nothing anyone could do about it since he had actually done no harm. In fact, his dismissal was announced "with regrets." A hospital official even added that he had shown a thorough and safe knowledge of psychiatry.

At about the same time that Daly was applying for his hospital job, William R. MacLeod began serving a one-year jail term in New York's Westchester County Penitentiary after he, too, had been exposed as a phony doctor. It seems almost incredible but MacLeod, who was only 37, had served five [*Continued on page* 166]



Gutenberg Bible Swindle: Real art object is stolen, sold to art collector who is delivered a counterfeit. Then real object is returned.

Fur Coat Gyp is another oldie. Con man, usually posing as sailor, sells a $15,000 seal (rabbit) coat for $150. He says he picked it up abroad.

It Takes Spunk To Spelunk

NOT long ago a couple of engineers were drilling an artesian well in Alabama. Everything was going along in routine fashion until the first gush of water shot up, bringing with it a startling creature—a pink fish, six inches long and without eyes! The engineers had tapped the bottom of an unknown cave.

To several thousand 20th-century American cavemen, such odd discoveries are nothing new. These spelunkers, as they call themselves, are part of the growing roster of men and women—from famous scientists to high school girls—who are spending their free time meeting the challenge of exploring and discovering caves.

Through mysterious passageways, sometimes hundreds of feet below the earth's surface, weird formations stretch miles underground. In these lie the most astonishing and breath-taking curiosities known in the world of nature. There are amazing pre-historic formations. There are rare and precious minerals. There are blind fish and blind salamanders. There are strange remains—and sometimes even fortunes!

Out in Grand Canyon country, for instance, two young men, Murl Emery and

Cave exploration is one of the last frontiers for adventure in America.

By Hugh Kingsley

Drill hole from surface provides spelunkers, above, with underground food supply. Below, Captain Cowling, who lead expedition into Virginia's Endless Caverns, catches subterranean eyeless shrimp.

Harold Carpenter, were skippering a boat along the turbulent Colorado River gorge when they spotted bats flying out of a hole 800 feet up one of the steep canyon walls.

They pulled their boat alongside the shoreline, just beneath the hole, and Carpenter volunteered to investigate. Up the stony cliff he went, inching his way hand over hand. Finally, he got to a point where he could throw a rope over a cluster of rocks that hung over the gaping hole. Crawling up the rope, from which a slip would have meant certain death against sharp rocks below, he slid into the cave mouth and flashed a light onto the floor.

Thin shafts of rays from his flashlight penetrated the darkness and disclosed a peculiar blanket of black-brown dust covering the cave floor. He climbed down and excitedly reported his find to Emery. Both agreed it was bat guano, highly valued as a nitrogen-rich fertilizer. There were probably tons of the stuff that had taken thousands of years and millions of bats to accumulate.

"Good as gold," said Emery. "Let's work it out of there and cash in."

First they got a permit from the National Park Service. Then they got financial backing for equipment, such as a sack-loading chute, an aerial tram and a diesel generator.

They were soon able to deliver 300 tons a month and the going market price is between $45 and $75 a ton. One test hole showed at least 2,500 tons in a single portion of the cave. Now, their strange fortune is said to be high in the six-figure category.

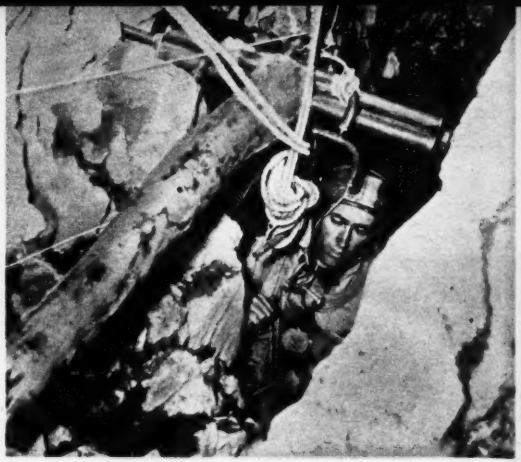
This sort of thing happens to other people, too. A couple of years ago near Pasadena, Calif., Adolph Schleicher found a cave containing bat guano valued at $500,000. As if that weren't enough reward for one man's interest in caves, an atomic blast last year in Nevada added to it. The blast started an earthslide that opened up another chamber of the same cave. This turned out to be bigger and richer in guano than the first one.

According to Ivan Sanderson, vice president of the National Speleological Society of America, a jaw-breaking title for organized amateur and scientific cave explorers, there are an estimated 50,000 caves in America. But only about 10 per cent of these have been found.

Cave exploring is a relatively new sport in America. The Speleological Society itself didn't get organized until 1939 and the spelunking boom got underway shortly after World War II. Now some 4,000 men and women, through local chapters called "grottoes," are on the Association's list.

If you're lucky enough to find a cave on your own property, or on property you can buy, there's no telling what use you can make of it. There are now 146 members of the Association who operate caves commercially as tourist attractions. "The cave business," says Mr. Sanderson, "is a multi-million dollar one."

Perhaps one of the most outstanding examples of a cave turned commercial by an amateur cave explorer is the one run by 27-year-old attractive brunette, Lydia Neubuck, at Pottersville, N. Y. The 423rd member to join the National Speleological



Franco-Belgian exploration group recently made first descent into the Pierre St. Martin Cave in the Pyrenees and claimed world's record for straight-down descent—1,068 feet. Group at left starts lowering spelunker Lepineux, right.

Society, Lydia, once named "Miss Cavewoman of the Year," left school to commercialize a cave in 1949. She got a group of school-children to help her clean out a water-filled tunnel and now offers tourists a chance to swim underground in the cave. Last year thousands of men, women and children paid admission rates (75 cents for adults and 35 cents for children) to go through her Natural Stone Bridge Caves. Lydia herself has been through just about every cave in the U. S. and calls it "the most thrilling sport in America."

Caves are important in the nation's defense program, too. The Army and the Navy, for instance, are constantly on the lookout for suitable caves which can be used for storing vital equipment. They fix up the caves and, naturally, keep the locations top secret.

Out near Atchison, Kans., the Department of Agriculture uses a 14-acre underground cave chamber for storing such surplus foods as 16,000,000 pounds of dried eggs. Like most caves, the storehouse is found to maintain a year-round even cool temperature. The Department pays $20,000 a year for the lease rights.

When Mammoth Cave in Kentucky developed a world-wide reputation attracting tourists by the thousands Uncle Sam offered to take it over as a National Park. The owner was offered $283,000 but he held out for $500,000. The government is now raking in over $1,000,000 a year from admission fees.

At Bella Vista, Ark., one man turned a cave into an underground nightclub called Wonderland Cave, and people flock to it from miles around. Part of it is also used as a chapel for religious services and another part for tourists who pay just to look around.

As an adventure-packed pastime capable of testing courage and skill, few sports exceed the thrills and magical attraction of cave exploring. Although with modern equipment and ordinary precautions cave fatalities are fewer than one for every billion hours of cave exploring, a cave accident invariably becomes a spectacle for sensational headlines around the world.

One of the earliest cave tragedies involved a man named Floyd Collins in 1925. Trapped under tons of rocks and sand in a Kentucky cave, thousands of people spent a small fortune trying to rescue him. The whole world seemed to stop just for news of the rescue operations. Unfortunately, Collins died of pneumonia while rescuers were about to reach him. Books, movies, songs and even poems were written about him.

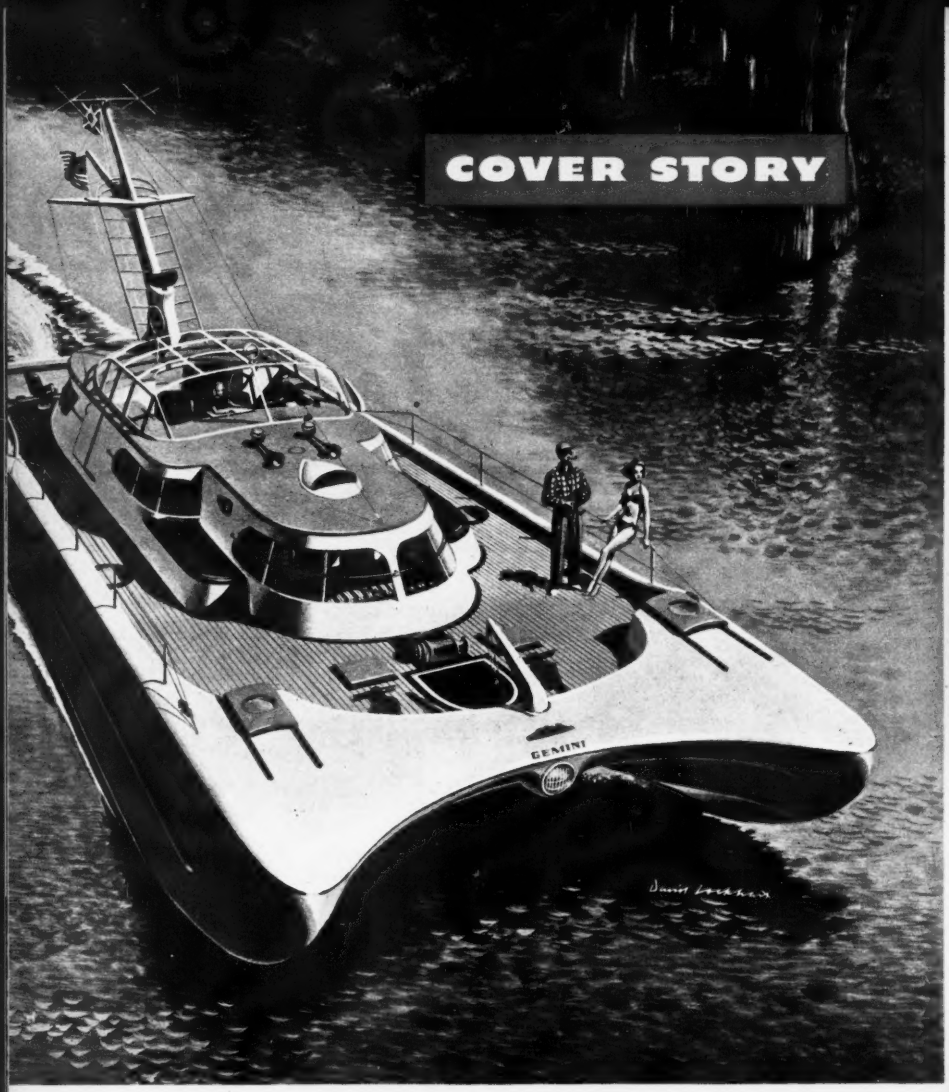
The latest cave adventure to attract world-wide attention took place in the summer of 1951, 1,000 feet underground near the little village of Ste. Engrace in the French Pyrenees. Three men—Marcel Loubens, a small businessman; Max Cosyns, a Belgian physicist; and Norbert Casteret, considered the father of modern cave exploration—decided to investigate the deepest natural cave ever discovered by man.

Loubens went down first. Inch by inch he was lowered on a steel winch until he hit the floor of a pitch black chamber. He spent a whole day and night exploring an underground stream that ran through the cave. At 9 a.m. [*Continued on page* 170]

PUSH-UP PLANE

1. Air intake louvers
2. Multi-stage air compressor
3. Compressor drive shaft
4. Drive shaft gear-box
5. Gas turbine power plants
6. Compressed air duct to nozzle
7. Diversion slots for vertical ascent

YOU may see this little plane streaking through the air some day—if Lockheed Aircraft takes seriously the patent recently assigned to it by inventor Nathan Price of St. Helena, Calif. Gas turbines drive air compressors in the wing tips which direct air either downward to lift the plane, or back through the tail to provide thrust. The pilot steers it by moving the plane's tail which is connected to the cabin by a universal joint. Original design is two-place with a span of 12 feet and a gross weight of 1,600 pounds. Cruising speed should be about 300 mph. In case of power failure, it can glide to a safe landing. The retractable landing gear has resilient cushions instead of wheels. These and hydraulic shock absorbers will enable it to touch down as softly as a helicopter. •



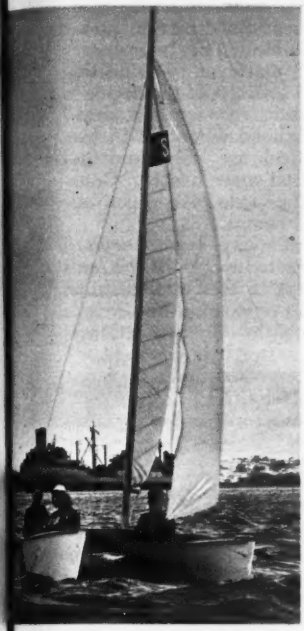
CAT COMES BACK

Spaciousness, speed and stability are features of latest catamaran designs.

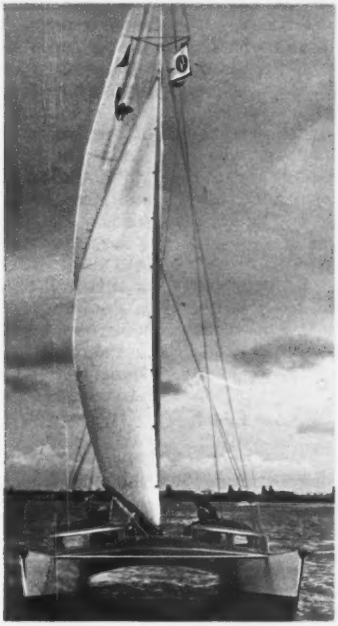
By David Lockhart and John G. Kingdon

HOW would you like a dream boat of an express cruiser that will skitter through shoal water like a Florida swamp buggy and take to blue water like a Gloucesterman? Gemini is just such a boat. Because of her catamaran design, she combines puddle-jumping and seagoing propensities as no conventional hull ever could, making her ideal for fast Intercoastal Waterway transportation to Florida and for deep-sea fishing after she gets there.

Sea Cat 16, manufactured by Custom Hydrocraft, has room for four in its twin hulls.



Four people can cruise in solid comfort aboard Custom Hydrocraft's 34-ft. auxiliary.



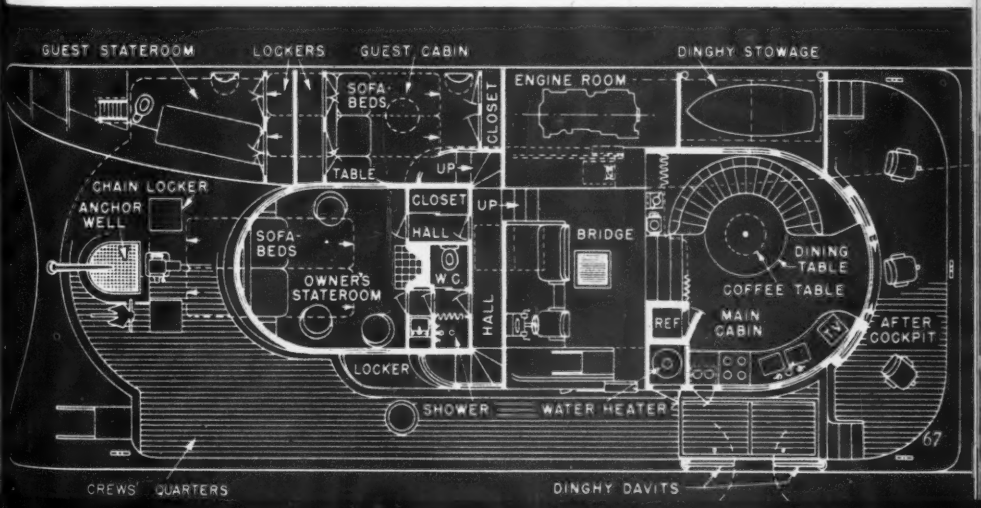
Available in both kit and completed forms, Lear-Cat's 16-footer is roomy and dry.

She is 65 ft. long, has a 25-ft. beam and draws 3 ft. at rest and about half as much when under way. Twin 300-hp diesels give her a cruising speed of 25 mph. She will accommodate seven people in the owner's party and a crew of two in comfort even on extended cruises.

Her hull design follows the accepted intriguing practice of taking a conventional hull, splitting it down the middle and using the port half for the starboard pontoon and vice versa—not forgetting, of course, to plank up the open wounds before the launching. The outer sides of the two hulls are thus flat and straight and the bow waves are thrown into the tunnel between the hulls.

The deck layout includes a stern cockpit 23½ ft. wide by 7½ ft. long. There's plenty of space here for either three fishing chairs or a host of deck chairs. Just forward of the cockpit, two dinghies stow out of the

MI-designed Gemini has accommodations for seven passengers and a crew of two.



way under hatches. Access to the bridge from the port and starboard decks is through sliding doors. The broad foredeck features a well through which the anchors are handled with ease and safety. The electric anchor winch is flanked by two chain-locker hatches and, further outboard, by two forecastle hatches. The rounded bow cowling encloses ample locker space for deck chairs and other bulky gear. A large headlight set into the bow facilitates locating a mooring at night. Atop the after deckhouse is a streamlined mast. It holds a TV antenna and its broad spreaders form fish-spotter lookout seats. Just above the base of the mast is a pedestal to accommodate a radar scanner.

Opening into the after cockpit through wide sliding double doors is a semicircular main cabin. A counter along the port side of the cabin houses a gas range, a double-basin sink and a television set. At the forward end of the counter is a compartment containing a water heater and inboard of this compartment there's a large refrigerator. On the starboard side is a semicircular lounge. In front of the lounge is a round coffee table on a floor-to-ceiling pipe. A larger table on the same pipe rests on the coffee table for dining and slides up to stow against the ceiling between meals. When under way at night, a light-tight accordion door between the main cabin and the bridge is shut so the bridge can be kept dark.

An aircraft-type Plexiglas canopy covers the bridge. The forward section of the canopy can be pushed back in good weather. For shade when the sun is strong, there's a roller screen on the underside of the canopy. A counter to starboard along the after end of the pilot house holds radar equipment, a radio direction finder and a radio telephone. The helmsman's seat is on a raised platform. Beside this seat is a settee and in front of the settee is a chart table that slides into a recess ahead of the forward bulkhead when not in use. Under the bridge deck are water and fuel tanks and an oil-fired space heater. Companionways on either side give quick access to the engine rooms.

Another companionway leads forward into an athwartships hallway. At the ends of this hall are steps to two guest cabins; in the middle, doors open into the owner's stateroom and the bath. The water closet and shower in the latter compartment are separately enclosed so that more than one person can use the facilities at a time.

The owner's stateroom and the guest cabins have worlds of closet and drawer space. Each compartment has twin beds that slide partially into a recess ahead of the forward bulkhead and thus form a sofa by day. And each compartment has its own wash basin. The big windows and fireplace in the owner's stateroom make it a cozy observation cabin in bad weather.

Gemini's name, for the incidental intelligence of those who may not have had their stars charted recently, is borrowed from the astrological twins and denotes her double-hull design. The word *catamaran* is derived from two words in the Tamil language: *kattu* (tie) and *maram* (tree). The catamaran was thus originally a raft or float consisting of two or more logs lashed together. It was moved by paddles or sails.

This primitive raft was eventually developed to the [*Continued on page* 168]

Remarkable stability of the Kattu 21-ft. outboard runabout is evident here. With all eight passengers over on one side, the boat stays virtually level.

Ski Flier is U. S. water jumper Alfredo Mendosa here showing his stuff at tournament at Minoqua, Wis. Wonder if he missed the cameraman?

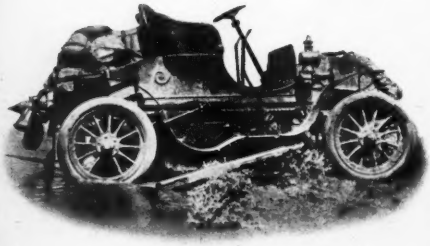
Strong Woman Joan Rhodes is 28 years old, does her bending in a night club in Dusseldorf, Germany. That's an iron bar she's bending. Spectators look scared.

MI-stoppers

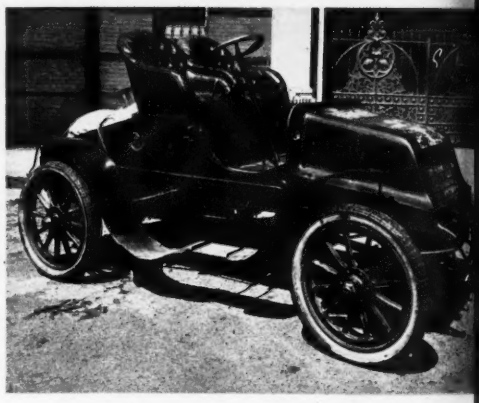
Old Man Whiskers the walrus is peeping cautiously from his hiding place in New York's Bronx Zoo. Is there a barber with a pair of tin shears in the audience?

Peeping Giant Paul Bunyan eyes pretty Eleanor Hall in new hardwoods display at Chicago Museum of Science and Industry. Face is seven feet tall.

First Car Across the U.S.A.



"Roads" like this were a motoring hazard in 1903.



Dr. Horatio N. Jackson, top, now 81, owned and drove the '03 Winton, shown in bottom picture as it appears today at the Smithsonian Institution.

SHORTLY after horseless carriages appeared on city streets at the turn of the century, a few visionaries began to dream of driving one from coast to coast. Initial ventures from the east bogged in the mud of the middle west, and those from the west came to grief in Nevada sand.

Then, one day in 1903 Dr. Horatio Nelson Jackson of Burlington, Vt., got to arguing automobiles with some friends at the University Club in San Francisco. Dr. Jackson, a six-foot son of a Canadian Congregationalist minister, was 31. Because of a touch of tuberculosis, he had quit medicine and with his wife was studying western mining projects.

A few weeks earlier he had purchased a Locomobile steam car and, to teach him to drive, had hired a 22-year-old chauffeur, Sewall K. Crocker of Tacoma, Wash. Though his knowledge of cars was slight, Dr. Jackson objected when a clubman asserted that "nobody will ever drive an automobile coast to coast."

"I will bet you $50 that I can do it in three months," retorted Dr. Jackson. The wager was accepted.

His chauffeur said the Locomobile would not do. Steam cars required lots of water and attention. Accordingly, Dr. Jackson paid $3,000 for a new 20-horsepower, chain-drive, two-cylinder 1903 Winton that had just been delivered in San Francisco. It was Winton No. 1684 and had right-hand steering and a crank at the side. Its best speed was around 20 miles an hour.

An extra 12-gallon gasoline tank was added under the car, which was christened the *Vermont*. It was loaded with camping equipment, sleeping bags, a compass, two spare tires, an ax, a rifle, a shotgun, two pistols, a camera, fishing poles, a canvas waterbag, two canteens, extra cans of oil and—most important—a block and tackle with 150 feet of five-eighths inch rope. Dr. Jackson's 225 pounds and Crocker's 150 pounds brought the total weight to a ton and a half.

On May 23 Jackson and Crocker embarked with the *Vermont* on the ferry for Oakland. To avoid the Nevada desert, they headed north for the old Oregon Trail.

Next day, taking turns at the wheel, they reached Sacramento. They spent a day

Just 50 years ago a daring Vermonter made history by spanning the country in 63 days by automobile.

By Tom Mahoney

Seven weeks after leaving California, Dr. Jackson (wearing goggles) drove triumphantly into Chicago in his mud-splattered car. Bulldog "Bud" joined the safari in Idaho, also wore goggles on rest of trip.

there obtaining maps—the road map for motorists not yet being invented. At an intersection a few miles north of Sacramento they encountered a woman riding a horse.

"Which way to Marysville?" asked Dr. Jackson.

The woman pointed down a road. Dr. Jackson turned that way only to find that the road ended in a lonely ranch. Returning, they again met the woman and chided her for sending them 54 miles out of their way.

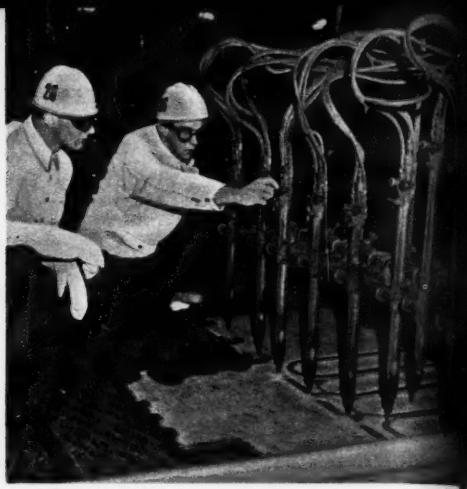
"That's my family's ranch," she explained. "I wanted them to see an automobile."

Over narrowing roads that became increasingly rocky, the Winton rolled northward, arriving in Alturas on May 30 with most of its camping equipment jounced off and its rear tires cut to ribbons by rocks.

Dr. Jackson telegraphed for new tires. When they failed to arrive after three days, he and Crocker wrapped the rear wheels with rope and pushed north to Lakeview in Oregon. The Lakeview Examiner thus chronicled the arrival of the Winton:

"It hove in sight at just four o'clock and the crowds surged forward to get a first look at a real live auto. The chauffeur inquired [*Continued on page* 176]

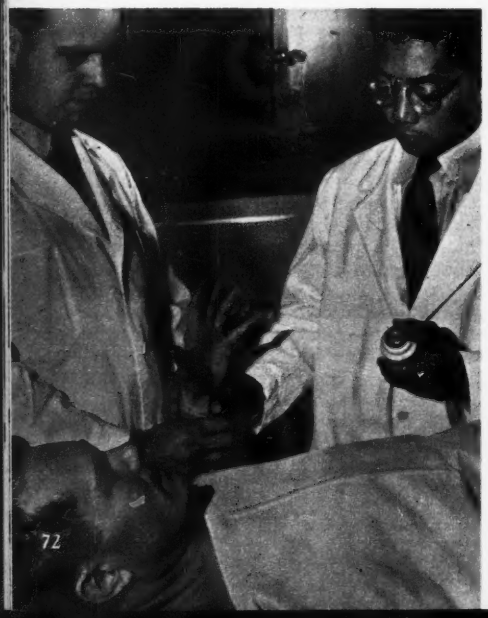
Super-Dome Cars built for the Milwaukee Railroad were recently put in service to supplement its Sky Top lounge-observation cars. Dome level seats 68 passengers. Lower deck seats 28, has dining facilities from electric kitchen and lounge.



Travograph machine in the Webb School at Brooklyn Navy Yard teaches students new techniques in design and manufacture. Device has eight oxy-acetylene torches, cuts out patterns in steel in single operation. Students are paid.

NEW in SCIENCE

Spray-On Plastic Dressing for burns and other surgical wounds is demonstrated by Captain Daniel S. J. Choy, right, who developed it for Air Force Research and Development Command. Called aeroplast, it dries fast, forms pliable seal.



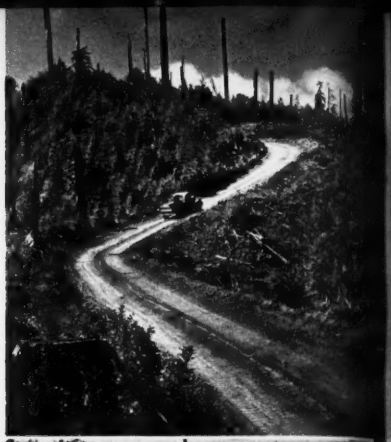
Walking Sticks, insects that feed on leaves of hardwood trees, crawl over R. A. St. George, entomologist of Department of Agriculture. He collected them on Polish Mountain in Maryland, is trying to find effective bug killer to stop their increase.

Piglet Feeder made by breeder John Percy of Chislehurst, Kent, England, has 14 taps. Heated tank contains milk and added ingredients that two-day-old baby pigs need for weaning. Device eliminates eight weeks they spend with sow.

Smallest Dictating Machine, Edison VP Voice-writer, is lighter by 25 per cent than any other machine. It can be carried in brief case, tucked under arm. Mike serves as speaker. Vinylite discs record 30 minutes. Can operate in car.

Lighted Tommy Gun makes for accurate shooting at night or in dark interiors where lawbreakers are apt to hide. Light fastens beneath gun barrel, is controlled by officer's left index finger resting on convenient switch button. Bullet follows beam.

Escape Snorkel was homemade by Czech refugee who used it to swim Morava River underwater to flee his country. He fitted a rubber tube to an old German gas mask, attached a cork to make tube end float, camouflaged top of tube with sticks.



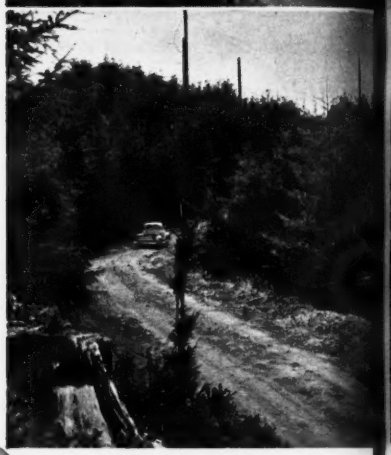


Photo revealing the devastation on the Clemons Tree Farm in 1941, top, contrasts sharply with a shot of the same area taken in 1951, above. Note how the area has been almost completely reforested.

Foresters at a sample study plot on the Hammond Van Duzen River Tree Farm make periodic measurements to determine the rate of growth of the residual stand of California redwood trees there.

Tree Banking Pays Off

America is finally awakening to the fact that forest conservation returns dividends to the entire nation.

By Robert M. Hyatt

SLAUGHTER in our forests has never been regarded as a crime.

Paul Bunyan was the boss logger of all time and legend tells us that he strode through the forests felling trees like nine pins. Then, the early pioneers improved even on old Paul's methods. With axes and fire they laid waste great forests, destroying valuable watersheds, paving the way for floods that were to ruin the very land they had cleared.

Yes, for three centuries no one gave a hoot about conservation. The woods, it was believed, would last forever and tree slaughter gained momentum.

Early in 1941, the Weyerhaeuser Timber Company of Washington decided to take a hand. They quietly planted tree seedlings on 120,000 acres of worthless logged-off land, establishing overall fire protection for the young growths. Posted on the tract were signs reading Tree Farm.

Old-time loggers scoffed at the experiment, having little faith in second-growth

Peeled pine poles, cut in a thinning operation, make up part of the dividends on Southwestern Settlement and Development Tree Farm in Texas.

System of staggered logging makes interesting scenic pattern. Area in foreground and light areas in background have been logged scientifically.

tree crops. But the first Tree Farm in America drew thousands of visitors, among them interested lumbermen from other states and newsmen who gave the experiment wide publicity.

Almost overnight, that project snowballed into the American Tree Farm System, the most phenomenal reforestation program ever conceived. Today, after 11 years, it reaches across 29 of the nation's most heavily forested states. There are more than 3,000 certified Tree Farms with protected and supervised forest areas in excess of 23 million acres.

Two-thirds of these 20th century loggers are farmers who have learned that their woodlots mean money in the bank. The remainder are the big commercial timber operators.

They've discovered that trees are a cash crop which can be raised and harvested just like any other crop—with far less care and bigger dividends. In effect, they've become tree bankers.

Take the case of L. K. Pomeroy of Wilmar, Ark., who owns 4,000 acres of timberland. His trees are his capital investment. They grow exactly one board foot of lumber per acre each day, or 365 feet per acre each year. That's his interest.

Tree banker Pomeroy operates a small sawmill on his tract. "Every morning," says he, "there are 4,000 feet more of lumber there than the day before. Every fifth morning it has grown enough wood to build a modern five-room house. My tree bank has been selectively cut every five years and has produced enough lumber to build a city capable of housing 3,000 people, complete with all the churches, schools, municipal buildings and theaters a city of that size would need."

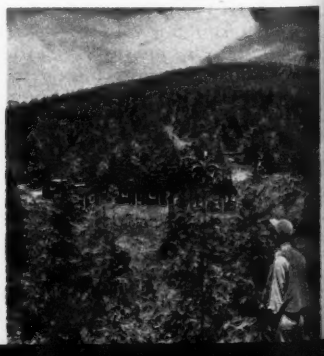
The nice thing about Mr. Pomeroy's tree bank is that the interest can be collected in regular wood harvests or it can be allowed to accumulate and compound for a specific purpose such as college educations for the children or an old-age retirement fund.

In the early logging days, when standing timber was available at 50 cents to $1 a thousand board feet, it was more economical for a sawmill to pack up and move than to grow its own trees. At that time only about 37 per cent of a tree trunk was marketable so [*Continued on page* 158]

In 1940, this area was completely cleared of saleable growth except for a few trees.

Nursery grown seedlings were planted by hand but 90 per cent of growth was natural.

Today, the once barren area looks like this—the result of careful planning for forest conservation.



Al with two gourd Ubangis. One has steel wool for hair, the other feathers. Eyes are buttons.

Buzzards, elephant head are made from gourd shapes fastened together. No two items are alike.

Gourd Head-Hunter

OPPRESSIVE years of being a bellhop, restaurant manager and then vegetable wholesaler left Al Kohanover discontented. He moved to North Hollywood, Calif., and built a store although he hadn't yet decided what to sell. Then he noticed some Calabash gourds his neighbor was growing and—wham! He got an idea. He made up some gourd flowerpots, birdhouses, dippers and other novelties, painted them with brilliant lacquer and displayed them in his store. The public went for them like a GI for a French ankle. Kohanover took it from there and these photos show how his skill has grown. And his bank account has, too. •

Like this little fellow above? He's popular at bars and private homes. Below are the raw materials to be converted by Kohanover's artistry.

His gourd creations are popular in advertising window displays, too, especially the penguin. Some are sad, others funny but all interesting.

A MONEY-MAKING

idea

Hoellich and some of many fun-makers turned out by his plant.

He Makes Merrymakers

This Brooklynite operates a million-dollar business. He even sells leis to Hawaiians.

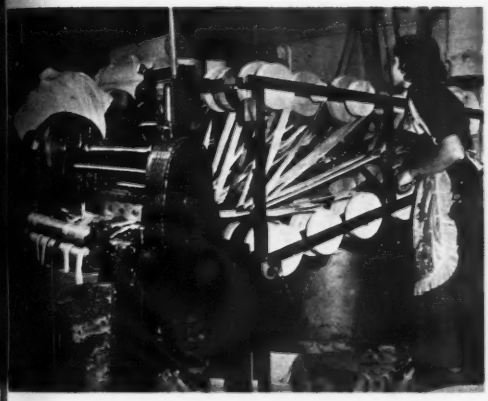
By H. W. Kellick

ONE evening not long ago a group of tourists in a Honolulu night club were being entertained by a bevy of beautiful hula dancers. When the performers concluded their dance routine they walked around the floor and draped colorful leis around the necks of ringsiders. A New Yorker, the recipient of a garland gift, turned to his wife and said jokingly, "I'll bet these things came from Brooklyn."

Although his remark was uttered in jest, the truth of the matter is that the Hawaiian leis did come from Brooklyn. They

He converted drill presses into hat-formers. This one, above, makes jockey caps. Below is a modern version of a lei machine which cuts the paper, then spins it. No sewing is necessary.

End of the horn production line, above. Each is stapled in shape by a specially-designed machine. Reed mouthpieces are injection molded in one piece. Below, the hand blow-out LaGuardia liked.



were right off the assembly line of Victor Hoeflich's Merri-Lei Company.

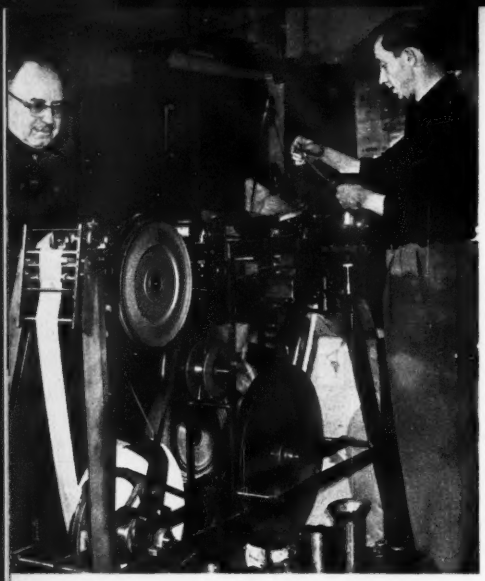
Regarded as the leading manufacturer of paper leis, hats, horns, blowouts and an assortment of party paraphernalia used by celebrants all over the world, Victor Hoeflich's firm has grown from a cellar shop in Portland, Oregon, to its present location in the New York borough where it does a $1,500,000 a year business.

Hoeflich estimates that about ten million of his paper party favors are used by American revelers celebrating New Year's Eve. Throughout the rest of the year his products are the life of dances, parties, conventions, sports events and other festive affairs from Maine to South Africa.

Recently when the brewers of the country ran a Bock Beer promotion, Hoeflich supplied specially designed top hats for the occasion. And when a major automobile manufacturer held a dealer's convention in Detroit, the main attraction was a new car model. This unveiling was the crowning point of the program. To keep in the spirit of the occasion guests wore brilliant, gold-colored hats that resembled kings' crowns, all supplied by Hoeflich.

A few years ago he stirred up the nation with his "Man From Mars Hat." This creation was a sun-tanned tropical helmet equipped with a two-tube, five-ounce radio that could reach any station within a distance of 50 miles.

When he first dreamed up the idea, radio experts said that it could never be made. Months later, however, after laborious experimentation in his makeshift radio lab, Hoeflich was producing the radio helmets for the trade which retailed them for $9.95. People wore them at sports events and on fishing trips. They became the rage on the nation's beaches. Hoeflich even recalls one policeman in a midwest town who received his short-wave calls on his radio helmet. Now Hoeflich is toying with the idea of



Machine designed by Hoeflich automatically folds and glues striped paper into strips for blow-outs.

making a space hat with an improved radio mounted on the crown. It will retail for about $3.95.

How did this gigantic novelty business get started? In 1911 when he was a youngster, Victor's family moved from New York to Portland, Oregon. He went to high school and learned to play the violin in his spare time. After graduating with top honors, he got a job as a private secretary to a local business executive. In the evenings he directed a dance band to earn extra money.

One day he decided to turn one of his dance dates into a gala Hawaiian party. When he visited a local music store to pick up some Hawaiian leis, he was shocked to learn that they cost 25 cents each. "Must be a lot of money in this stuff," Hoeflich snorted.

"Not too much," replied the clerk. "They're handmade and it takes an hour to make each one."

Hoeflich left the store with one garland under his arm. When he got home he took it apart and studied its construction. Then he went to a nearby junk shop and picked up two automobile gears, some dismantled bicycle parts, bailing wire, rubber hose and some parts from a wrecked phonograph. In his cellar, working nights, he assembled the parts into a contraption that made a Rube Goldberg invention look tame by comparison.

Despite its crude construction, the machine turned out paper leis in half the time it took to make them by hand. The garlands made a big hit at the dance.

Encouraged by the favorable reaction, Hoeflich spent his evenings manufacturing them in his cellar. He sold his first dozen to a local music store realizing a small profit on the sale. As his production increased, he expanded his sales to department and novelty stores.

When profits began increasing at an amazing rate, Hoeflich gave up his secretarial job, disbanded his orchestra and opened a factory with the capital he had amassed. But as time went on, he realized that materials and contacts in his field were all centered in New York. So, in 1925, he moved his plant to Brooklyn.

At first Hoeflich's leis were made from a single strand of paper and spun thread. In the trade this is known as the Illinia method. Merely by substituting wire for the spun thread, he created the first paper Christmas wreath. His new idea became an instantaneous success and as a result he gained world-wide attention among dealers and jobbers. But as he developed more and more new paper novelties, he discovered that there was a lack of machinery to make them.

"As you know," said Hoeflich, "paper novelties were handmade by cheap labor and imported from China, Japan and Germany. There were no tools or machines available for our industry. There was only one solution to my problem. And that was to devise and make my own machines."

For a man who lacked a formal education in engineering, this wasn't as simple a task as one might think. However, by applying the same know-how that created the first lei machine, Hoeflich was able to design and build tools that ultimately revolutionized his industry.

For many years, for instance, mouthpieces for horns were made in Germany. The war cut off this supply. So Hoeflich designed a plastic mouthpiece made on one piece instead of four. When he was unable to get a mold made on the outside, he had no other alternative but to make it himself. It is considered by plastic experts to be one of the most precise molds ever devised. And using it he can produce 72 mouthpieces a minute with the reed an integral part of the mouthpiece.

Some years ago Hoeflich wanted to develop paper hat production. He called on engineers to dream up tools for their manufacture. As in previous cases, the experts were stumped. They were unable to produce any workable tools. So Hoeflich burned the midnight oil, even working on weekends, and after months of diligent research he [*Continued on page* 172]

Monsters at Work

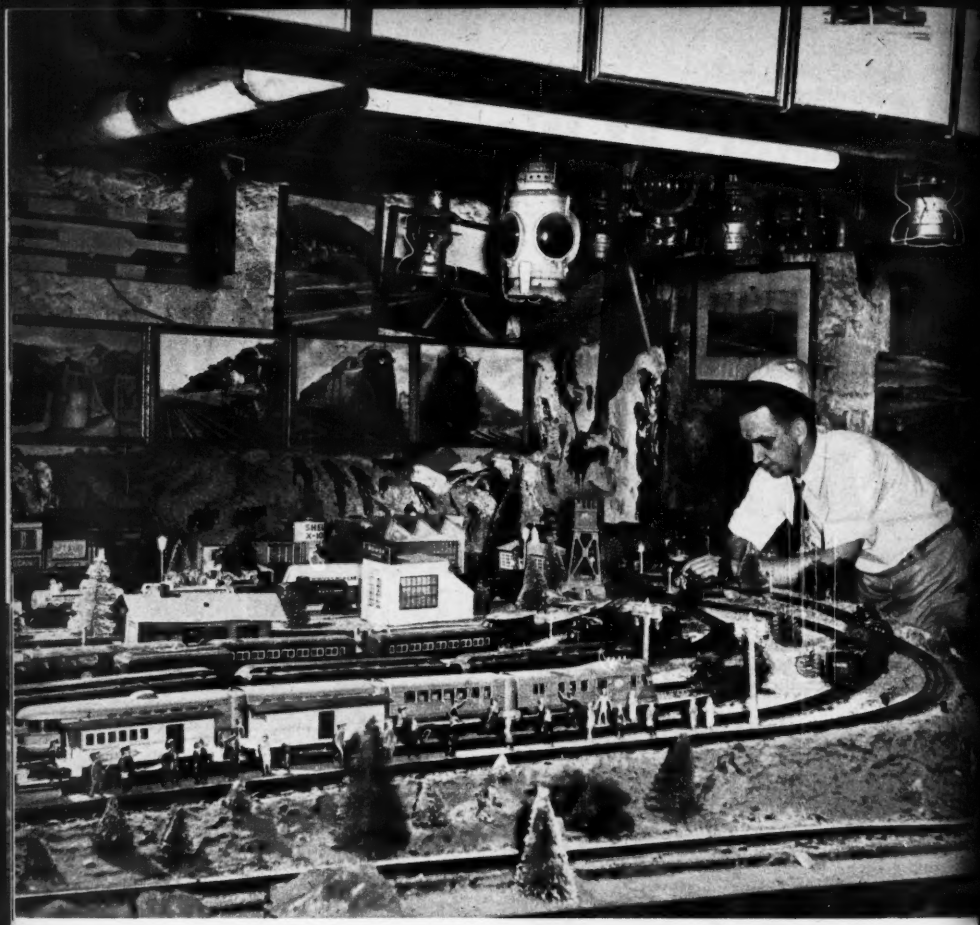
Or are they men from Mars? Neither, really, but in the interest of safety, industry has had to devise some peculiar uniforms for its workers.

This suit made of plastic, complete with air tank, protects its wearer from contaminated air at Los Alamos Scientific Lab.

Welder, left, must wear a protective hood to keep from being burned or blinded. Skull insignia is a reminder of danger of work.

Ghost garb is worn by lab man filling penicillin inhalers at Squibb plant. It keeps room sterile, protects him from dangerous ultraviolet rays.

Blaster in arsenal at Watertown, Mass., must guard his face and lungs from flying particles. Air is supplied through pipe entering helmet.



Cellarful of Railroad

His hobby literally is driving McKeand out of the house. Already it has taken over all his cellar and backyard.

By Art Henry

BOB McKEAND is a dyed-in-the-wool railroad man. During the day he works for the New York Central's real estate department in the New York office. Evenings and week-ends he operates one of the most amazing railroads in the country.

In the large cellar of his house which is appropriately located on Railroad Avenue in Tuckahoe, N. Y., there is a maze of tracks, tunnels, terminals, turntables, switches, signals and lights that run the O-gauge railroad over a 1,400-foot route in 12 minutes flat.

When the cellar got too small for his line, Bob dug tunnels under his house and ran the railroad under his front porch and

The main control board which operates the indoor section is shown at top. Railroad operates for 21 cents a day. Above photo shows four levels including stainless steel track imbedded in floor.

In top photo a bridge lifts so cellar door can be opened. Light on control panel will show an open track. Above, train emerges from cellar tunnel to continue its run in backyard garden.

out in the backyard where it reaches through his flower and vegetable garden.

Four people are required to run the system. Bob, his wife and two daughters are experienced railroad "men" and they run the line efficiently but sometimes he has to call in his cronies to help.

He became interested in model railroading about ten years ago. He started with wind-up trains and these soon grew into electric cars—more and more of them. He built a village out of cardboard and five-and-dime store trimmings. Mrs. McKeand complained that her husband was taking all her storage space in the cellar but Bob paid no attention to her protests. He kept on building his railroad empire.

Before long, every bit of space in the basement was converted into a major railroad project. In the layout there are upper, middle and lower levels. Even the floor has tracks embedded in the concrete. Outdoor and indoor stairways to the upper floor of the house are blocked by drawbridge-type platforms.

Today, the railroad is valued at more than $5,000 but this doesn't include time or labor spent on its construction. The miniature railroad consists of 16 engines, 45 cars, 30 switches which operate by hand and by remote control. There are 15 towns complete with oil and gas wells, factories with tall smoke stacks and one town even features a burlesque house. Shrubbery comes from the five-and-dime store counters.

The towns are named after immediate members of Bob's family. For instance,

Train makes a stop at a suburban station in the flower garden. Most stations are named after members of McKeand family and fellow RR fans.

Roberta, aged seven, watches a train highball past an outdoor station. In front is fish pond, with bars to prevent accidents, and fountain.

Drawbridge over walk lifts for small pedestrians but adults can step over it. Authentic RR lanterns give visual warning when trains run at night.

the town of Elton on the railroad line is named after his wife, Elsie. And Ronnieville, on the lower level, is a complete village named after his eldest daughter, Ronnie, aged 10.

In the outdoor layout, rails of stainless steel are embedded in concrete. Along the route you'll find a lake with fish in it. Also, there are suburban stops, tunnels and a replica of High Bridge which is located near New York City. Trains pass an actual cornfield, vegetable garden, flower beds and a variety of tall trees. McKeand runs the railroad in all kinds of weather. The only time he has to cancel trips outdoors is when sleet settles on the tracks.

Like big railroads, his system, too, runs into operating troubles. Once, while he was running the cars outside, his cat spotted a squirrel and chased it. The squirrel ran pell-mell along the track, saw the train and leaped over it. The cat forgot to leap and collided with the engine head-on. It was a pretty dizzy animal for the next few minutes.

Another time a snail crawled on the track rail and derailed the cars.

Then there was the time Mrs. McKeand's canned tomatoes exploded in the cellar and for the next three weeks the family was kept busy picking the seeds out of the engines and cars.

Besides his railroad, Bob has a miniature museum of railroad items like spikes, antique and modern lanterns, tickets, passes, rule books, insignia from all lines.

Living near a railroad, Bob often finds his miniature train whistles compete with the big engines. But he and his family don't mind that too much. After all, they own their own railroad. •

Outdoor switch sometimes jams with snow and ice in winter. Light bulb under reflector at top provides sufficient heat to keep it working.

THIS MONTH'S PRIZE

gadget

Device operates on two small batteries. Wire clips to side of object to be electroplated.

Pocket Electroplater

JOSEPH NIVER of New York City was in the silver polish business for 25 years. Then an inventor came out with a silver-plating solution which Niver marketed under the name Silv-R-Cote. It worked well and simply. But one day a representative of a large New York store called up Niver and asked him if he could come up with a method that could produce a more lasting result. Niver went into a huddle with Arthur Strunsky and they developed a device which will plate worn parts electrically.

Using a bottled solution and a brush powered by two Pen-lite batteries, you connect the clip, depress the switch on the end of the fountain-pen-like holder, dip the brush with concealed anode in the solution and apply. Wipe off the excess with a cloth and the result is miraculous. The Met-L-Cote will plate worn chrome or nickel auto or home accessories of brass, copper, iron, steel or bronze. And the more you repeat the process, the thicker the plating. For silver-plating, Silv-R-Cote and a silver anode brush are used. •

WIN $50

Dreamed up a neat gadget? If you're pretty keen about that pet project of yours, get busy and work it out in your shop. Then send pictures and a description of your invention to the Gadget Editor, Mechanix Illustrated, 67 West 44th Street, New York 36, N. Y. Each month the best entry gets a cash prize of $50.

Inventor Joseph Niver shows how gadget plates worn surface of silver-plated coffee pot in his office of J. N. T. Corp., 1440 Broadway, New York.

MECHANIX ILLUSTRATED

PIN-UP CAR

1908 FRANKLIN RUNABOUT

Owner: Albert A. Hood of Wyckoff, N. J. Engine: 4 cylinders, 3¼-inch bore and stroke, cage (concentric) valves, air-cooled with blower on flywheel. Front and rear bucket seats are interchangeable. Foot brake works on drive shaft, emergency on rear wheels. Weight: 1,600 pounds. Wheelbase: 95 inches. Gas consumption: 20 mpg. Top speed: 40 mph. Original cost: $1,650.

Front and rear bucket seats are interchangeable. Foot brake works on drive shaft, emergency on rear wheels. Weight: 1,600 pounds. Wheelbase: 95 inches. Gas consumption: 20 mpg. Top speed: 40 mph. Original cost: $1,650.

Motor Rickshaw produced in Munich, Germany, has a 6½-horsepower engine, can travel 32 mph. It is being made for export by former aircraft company.

Scooter Sedan has boat-like hull, airplane-type canopy top which swings to open. Engine is 150-cc developing 50 mph speed. Fend Co., Rosenheim, Germany.

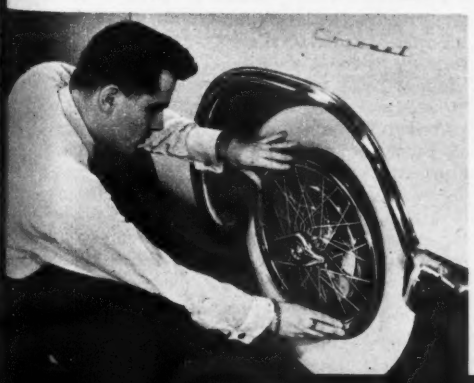
NEW for the ROAD

WIN $25

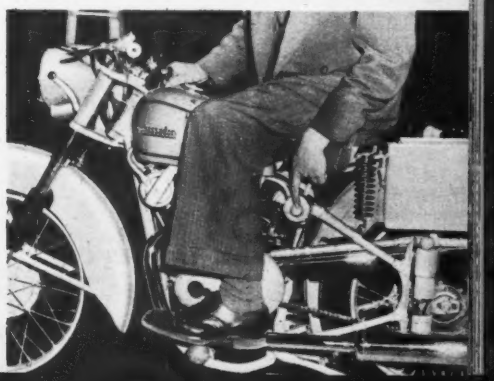
Send in a sharp, glossy photo of a snazzy car, old-timer or new, posed as at left with owner or a pretty gal. Include self-addressed, stamped envelope (just in case) and all vital statistics about car and owner. Mail to Pin-Up Editor, MECHANIX ILLUSTRATED, 67 West 44 St., N. Y. 36, N. Y.

Car Coffee is now possible with the Paluxette coffeemaker designed to fit the dash of your automobile. Heating unit plugs into cigar lighter. Munich, Germany.

Wire Wheel Discs replace your regular hub caps, give your car that Continental look. Light in weight, chromium plated. Gaylord-Shelton Inc., Chicago, Ill.



Motorcycle Starter works from heavy-duty six-volt battery, has capacity of 1,000 starts without recharging. Button is below saddle. Fits most foreign cycles.



MI Tests the '53 LINCOLN

From the front seat of a new Capri convertible, Tom looks down the famous Ford test hill at the proving grounds in Dearborn during his trial runs.

"Sensational" is the word for this new 205-horsepower, 112-mile-an-hour luxury car which our Uncle Tom believes to be the Grand Champion and America's finest automobile.

By Tom McCahill

WELL, they finally whacked the whiskers off Lincoln. For lo! these many years, ever since Benson Ford supervised the burying of the Glamorous Continental, Lincoln has been turning out some pretty mediocre high-priced cars. In 1952 they introduced a car that *almost* had everything but instead fell as flat as yesterday's souffle—in performance. You regular readers may recall that I lambasted the Dearborn kids for this at the time, for which I got a lot of hard criticism, especially from the company boys.

But how about the '53 jobs that cleaned up the stock sedan division of the 1,900-mile Mexican road race by finishing 1-2-3-4? For my devalued dollar this car, that looks much the same as the all-new '52, can now be crowned the Grand Champion of them all. For many years, I have rated the Cadillac as America's number one car for several reasons. First, for the amazing way it held its resale value; second, because aside from spongy roadability it was a better automobile all around than any other car made on these shores, especially in its reliable and hot engine. Today I rate the Lincoln head and shoulders over Cadillac in every department except resale value and even this margin should shrink as soon as these new Lincolns get to be better known.

Let's list all the 1953 Lincoln features first and work from there. The Lincoln is far ahead of any immediate American competitor in roadability and cornering. This

is one of the reasons why it made such an outstanding record in Mexico. More important, its top handling properties make it by far the safest car in its price class. Until now we have rated the Hudson Hornet as the finest and safest handling American car but the Hudson must share honors with Lincoln. In the performance department the Lincoln is outstanding.

The AAA officially timed this wagon out in Utah at 115.8 mph for a two-way average and at 114.2 for 100 miles. As I wasn't at these trials I have no way of knowing whether the car ran with air cleaners, or an altered vacuum spark advance, or whether it was retimed to compensate for the late time of a vacuum advance unit at open throttle. In such a case the timing would not be as specified by the manufacturer for the showroom stock Lincoln. I do feel, however, that the 1953 Lincoln as delivered at sea level will not go 115 mph. One hundred ten to 112 seems to be about par for the course but this still makes it America's fastest car at this writing. As we go to press I have not tested the new 210-horsepower '53 Caddie but I will make book the Lincoln will take it.

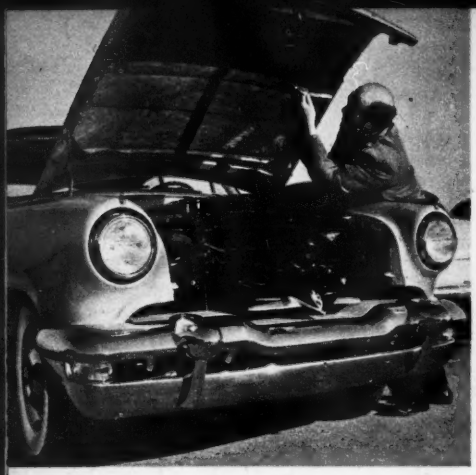
Back to the Salt Lake tests for a moment. The great Utah salt flats, where many automobile records have been hung up, do not always give a true picture of an automobile's real potential. In fact, all cars will run faster on the salt flats. Most professional speed merchants have been aware for some time that altitude plays a major part in high-speed records. The salt flats are approximately 4,800 feet above sea level and in this hangs a tale.

As you probably know, for every thousand feet your car operates above sea level, there is a definite drop in engine power because while at sea level the air pressure is rated at 14.7 pounds per square inch, this pressure decreases as we climb. A 100-horsepower engine at sea level will only develop approximately 70 horsepower at 10,000 feet due to the lowered density of air. Here's the gimmick. At the salt flats' 4,800 feet an MG, Lincoln or any other car will develop less than 90 per cent of its sea level power. But, by the very same important token, the air resistance against the car at high speeds will be much less. American cars having tremendous speed-retarding frontal areas will actually *gain* quite a bit more by this decreased air resistance than they *lose* through horsepower drop. The less streamlined the car, the more it will gain over its normal sea level performance. At any speed above 100 miles an hour, in a typical Detroit balloon, the air resistance factor becomes fabulous.

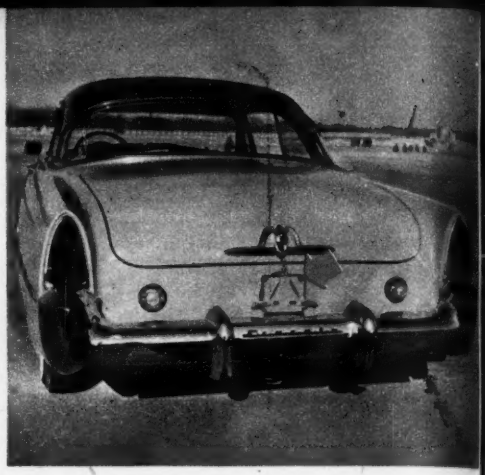
As a very rough calculation it is fairly safe to state that any American car which can do a solid 100 on the salt flats will be lucky to pass 95 at sea level. This in a way accounts for some of the strange records we have questioned in the past regarding high altitude speed runs. For example, Bill France drove a Nash Ambassador in the 1950 Mexican race for many miles at a faster average speed than the car could go for one mile in New York. He privately attributed this to the fact the car was running at around 5,000 feet of altitude much of the time.

Of course, in this sort of calculation, you reach a point where altitude works against speed. In very rare atmosphere such as you find at, say, 10,000 feet, your carburetor mixture is thrown way out of kilter and the engine runs much too rich, due to the decreased amount of oxygen. Oxygen is

Uncle Tom and pal Joe seem favorably impressed with the Cosmopolitan sport coupe they just tested.



Sound-deadening material under the hood helps suppress noise from the powerful 205-hp engine.



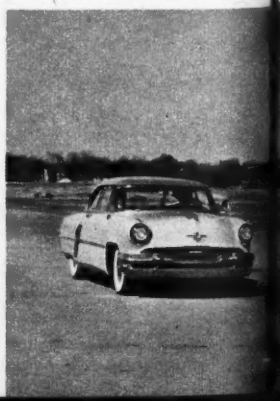
Hinged license plate holder (arrow) conceals the either-side accessible gas tank filler cap.

the only part of air that burns in an engine and a gallon of air contains only 21 per cent oxygen. Naturally, as the oxygen thins out due to less density of the air, it reaches a point where it doesn't contain enough moxie to rev up an unloaded engine to peak rpm's so that, despite reduced air resistance, speed falls off. Most qualified engine men agree that for top speed in an automobile 3,500 to 5,200 feet altitude will produce greater speed. Beyond 5,200 feet, speed falls off very fast, unless you use higher compression heads and make carburetor adjustments. So much for salt flat records. Now back to the '53 Lincoln as you buy it.

All Lincolns are now equipped with a four-speed Hydramatic transmission. This unit is far superior to the original sludge pots in every way though, being a diehard, I still think I can shift much better and I know I can get more out of a car with a manually-operated transmission. Actually, there is little if anything to be gained with these automatic transmissions by starting in Low and shifting to Drive in acceleration runs. Zero to 60 averaged out 12.61 on a corrected speedometer and zero to 30 averaged 4.42 seconds on several trials with several cars.

Lincoln also has a brand-new four-barrel carburetor that's a beaut, thanks to their able, long-time ignition and carburetor chief, George Nastas. This job, unlike some of their competitors', is a single-float gismo that shows no sign of loading and starving, all at the same time, on hard turns. The engine has been boosted from last year's 160 horsepower to 205 and the torque has been upped to 305 foot pounds from 284. The exhaust system has been improved. Part of the real boost on the same 317-cubic inch '52 block can be attributed to the increase of the valve size and valve lift and the jump in compression ratio. The valve area in '52 was 1.74 inches per valve; in '53 it is 1.98 inches. The valve lift in '52 was .3375 inches and this year it is .3545. This naturally assures much better and deeper breathing. The compression ratio has been hopped to 8 to 1 from 7.5 to 1.

I tested several Lincolns with regular steering and found them outstandingly responsive. Then I whirled one around with power steering. You can keep power steering. I don't want any part of it. I got a bad impression of Lincoln's power steering when an eager beaver engineering assistant wheeled one out for the test. He came up to us like a ball of fire, cut the wheel hard and, so help me, I thought he was going to roll the automobile. This really able road car, under the pressure of his exaggerated cut, mushed like a balloon in a down draft—and I was very unimpressed. Later, when I buzzed this rig into a hard turn on the proving ground at speeds close to 90, the power steering felt very



Superior cornering and roadability, far right, characterize new Lincoln, which is much faster and more powerful than the 1952 model it so closely resembles in styling.

In addition to power brakes and steering, '53 cars offer optional 4-way power seat adjustment.

SPECIFICATIONS

MODEL TESTED:

1953 Lincoln Cosmopolitan sport coupe with 4-speed Hydramatic transmission

ENGINE:

V8 cylinder, OHV; bore 3.80 inches, stroke 3.50 inches; maximum torque 305 foot pounds @ 2000 rpm; brake horsepower 205; piston displacement 317.5 cubic inches; compression ratio 8 to 1

DIMENSIONS:

Wheelbase 123 inches; overall length 214.1 inches; tread 58.5 inches front, 58.5 rear; width 77.5 inches; height 62.7 inches; weight 4,000 pounds (approximately); standard tire size 8.00x15; gas tank 20 gals

PERFORMANCE:

0 to 30 mph, 4.42 seconds
0 to 50 mph, 9.7 seconds
0 to 60 mph, 12.61 seconds
0 to 70 mph, 17.6 seconds
Top speed, 110-112 mph

SPEEDOMETER ERROR:

At 60 mph on speedometer, actual speed 55 mph

feathery compared to the solid feel I got with the other Lincolns.

The power brakes on these cars are swell and there was little trace of fade on the hardest stops. In the looks department this year's Lincoln is very similar to last year's offering, with a few chrome rearrangements. If you happen to be in the market for a Lincoln, try and see one without the ten buck hood ornament first. I think it looks a thousand dollars better without the gee-gaw and you save a sawbuck to boot. At this writing you can order them either way. As for comfort—here again the Lincoln shines. From the driver's seat you get a slight ski-slide look, similar to a Mark VII Jag, that is great for visibility. The seats are chair high, similar to Chrysler's but without the high roof line. The body is five inches narrower than the 1952 Cadillac which is a real feature, especially in view of the fact that the Lincoln has only two inches less seat width. This makes the Lincoln feel much handier in traffic, which it is. All the interior lines, including the instrument panel, are clean and have that good-looking functional quality. The back seat is also comfortable, as it should be in this luxury item. This year there are five models, all on a wheelbase of 123 inches: the Capri four-door sedan, hardtop and convertible and the Cosmopolitan four-door sedan and sport coupe.

Some of my more ancient readers may remember when Henry I advertised that you "can buy a Ford in any color, so long as it's black." This year, the 50th anniversary of the Ford Motor Co., you can get your new Lincoln in any one of 13 basic colors and 30 (count 'em 30) two-tone color combinations, along with a fairly dazzling selection of upholstery fabrics which include leather, nylon, broadcloth, tweed and something called frieze. The doors also have a new two-position check mechanism featuring a halfway stop to hold them open when you dismount into one of those skinny 1953-type garages.

In summing up, the Lincoln is a high-priced car giving high-priced performance. As of now I haven't tested the 1953 Cadillac or 1953 big Chrysler. On what I have seen to date I can honestly state that the 1953 Lincoln is America's finest automobile. •

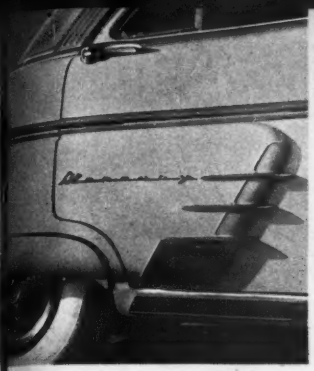
McCahill Drives the '53 MERCURY

Not greatly changed from last year, the new Merc is slightly faster and as reliable as ever, Tom discovers.

Straight muffler, bigger tail pipe, improved carburetion and manifolding have given the 1953 Mercury more punch.

THE 1953 Mercury is a twin of the 1952, even to the hole in the hood that isn't a hole. The new models have more engine punch than last year's, due to a straight muffler and an increase in tailpipe size from 1¾ inches to 2 inches, plus better carburetion and manifolding. But my tests will show slower pickup because this year's runs were made with a Mercomatic transmission.

Mercury, the old Roman God, among other things was also the patron of merchants and thieves. Mercury, the automobile as we know it, was developed in the late 1930's to give a guy with a limited pocketbook a real snob's Ford at a price averaging about two hundred fish more than Henry's good old popular rent-payer. When Mercury was taken under the wing of the Lincoln division back in 1949, its character was altered from an upstart Ford to a low-brow Lincoln. As an old Mercury owner (1946-1947-1948) I was a little chagrined when they took my pet rowdy and made a cream puff out of it. Since then Mercury has fought its way up, in my



Chrome slash has been altered this year but styling is just about the same as on '52 cars.

Front windshield? Nope, that's the new trim on the '53 Merc's wraparound rear window.

Back end treatment has changed somewhat, mostly in trunk compartment lid-lifter.

estimation, to a brand-new point of respectability.

Mercury won the Grand Canyon economy clambake, which happens to impress me as much as if MI paid me in three-dollar bills. What does impress me, however, is the record it has for reliable service and for giving the average owner real satisfaction. In the past, Mercurys were the number one favorite of Kentucky and Tennessee moonshiners for making fast cross-country runs when race contests with the local revenue boys were an everyday occurrence. Some of today's outstanding stock car drivers were once mountain moonshine runners and the slides, spins and fast cornering techniques they learned then have since won them a hotel full of money on the race tracks of the nation.

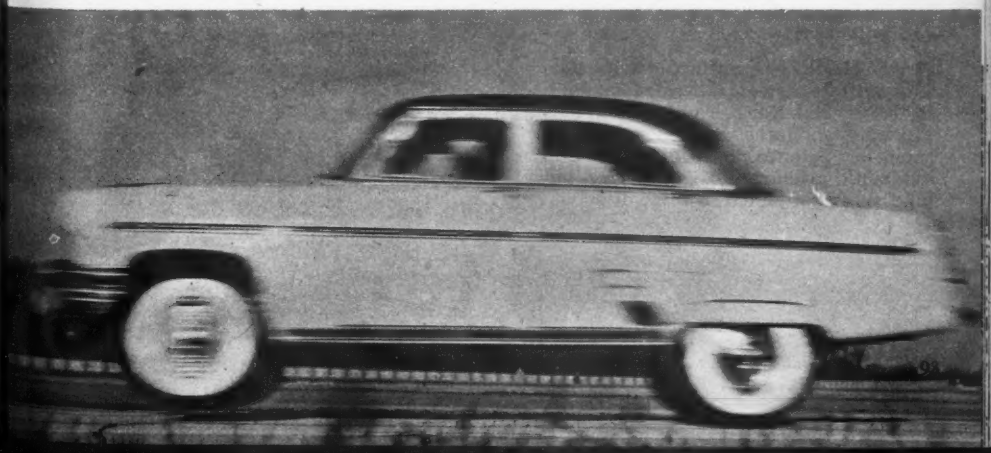
From this you can see the Old Roman God Mercury, the pal of the light-fingered set and of fast-moving messengers, was a pretty right guy to name the original car after. Since Mercury became a junior Lincoln it is no longer the darling of the moonshiners and has taken its place as a favorite among the more conservative, middle-price buyers. And if that isn't the automotive Jekyll-and-Hyde switch of the century, you'll never see one.

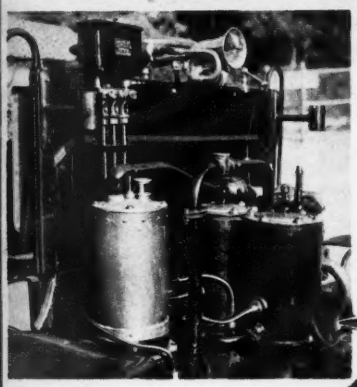
Last year we reported that the '52 Mercury with an overdrive transmission did zero to 60 mph in 15.1 seconds. This year, with a hotter power output, the best zero to 60 (using the Low and shifting to Drive range of the Mercomatic) took 16.08 seconds. It took 19.2 seconds in Drive all the way. This is actually an increase in slowness over the 1952 model's sludge pot transmission of close to three seconds. Last year's job with Mercomatic took 19.05 (using Low and Drive) to get 60.

Power steering is available this year on all Mercurys if you care for it. The driving seat, as in the Lincoln, now is much better, with more alteration control than before. The front seat can be moved back and forth 4½ inches and up and down 1½.

Last year I took a few hard swipes at the silly hood design with its open crocodile mouth that wasn't really open. I have been told since that this was done to make room for a higher overhead valve engine. A year later, this mill [*Continued on page* 162]

All four wheels leave the ground as Tom takes a Mercury over a proving ground test bump at 75.



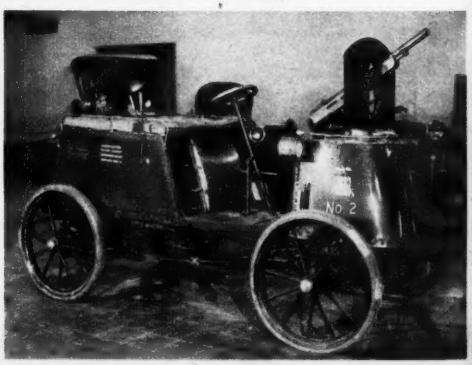


1894 Dreamboat

THIS six-passenger French Fisson owned by Robert Dowling of Easthampton, L. I., is a real relic. Its two-cylinder engine, upper left, develops 8 horsepower. Speed is 30 mph. Wheel under driver's leg, above, operates parking rim brakes. Radiatorless 26-gal. water tank provides cooling.

First Armored Car

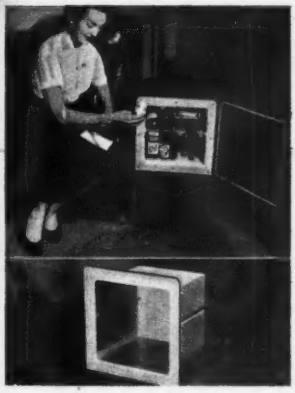
MECHANIZED warfare got its start with this steam-operated car built in 1898 by Col. Royal Davidson and now carefully sheltered by Chicago's Museum of Science and Industry. Colt automatic machine gun is mounted behind an armor shield in front of driver.



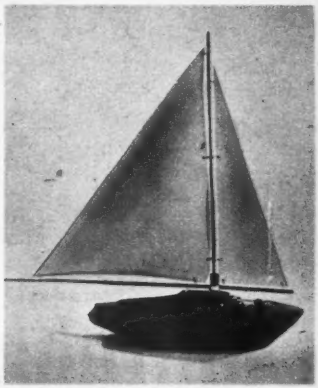
Zigzag Sewing Machine, Elna Supermatic portable made in Switzerland uses slip-on plastic discs, sews straight or decorative. Bert Nevins, Inc., N. Y. C.

Two-Timer plugs in wall socket ahead of your household appliance, turns it on or off at any desired hour. Use it on lights, radio, TV. Vocaline, Old Saybrook, Conn.

NEW for the HOME

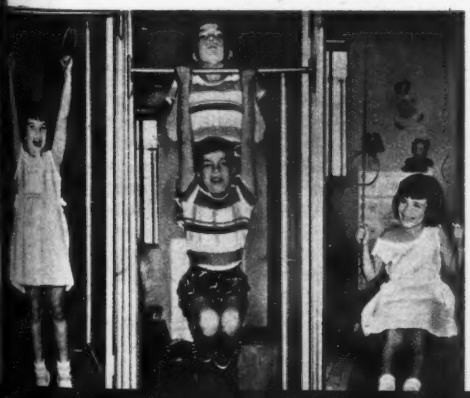


Refrigerator Jr. has full cubic foot volume, measures 28½x16x 19½ inches. Durable Products, Inc., N. Y. C.

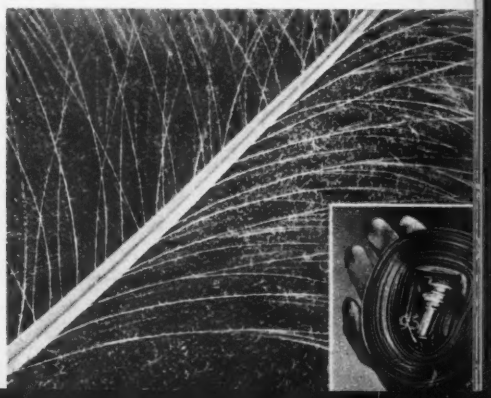


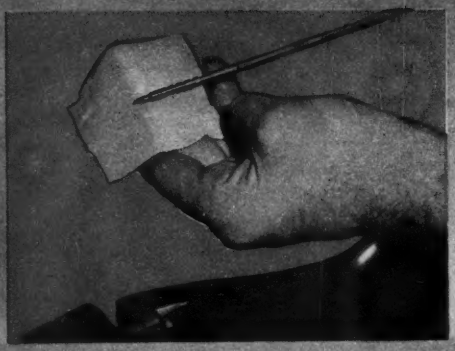
Tenna Boat is a shipshape TV antenna equipped with condenser to tune to any set. Earl Kraft, Baltimore.

Indoor Gym for children has chinning bar, gymnasium rings and a swing, hangs in doorway of room. Holds 300 pounds. Osrow Products, Queens Village, N. Y.



Sprinkler Hose of plastic has fine holes along sides, sprays area 12x50 feet. Won't rot or mildew when stored wet. Andrews Sprinklers, Hollywood, Calif.





Always clean from breech end, never muzzle which might become damaged. Use cleaning rod with serrated tip to hold patches, brass brush if needed.

Mothballing Your Rifle

Don't ruin that good gun! Spend a few minutes checking, cleaning it before putting it away till fall.

By Raymond R. Camp

Rod and Gun Editor, N. Y. Times

THE average American shooter suffers under the delusion that oil has the same effect on rust that camphor has on moths. He is convinced that if he can slop enough oil on his rifle or shotgun before storing it away, it will come out all bright and shiny next fall. This little misconception is responsible for more new-gun sales than any high-pressure advertising campaign ever conducted by any firearms manufacturer.

The sportsman who checks his gun carefully and gives it the right treatment before storing it will unwrap it next shooting season in perfect condition as far as accuracy, mechanical functioning and appearance are concerned. The man who fails to do this is

After washing action, bolt in clear gasoline or lighter fluid, apply oil sparingly, top photo. Stocks are bound to get nicked, scratched. Use fine sandpaper, oil, rub with heel of hand.

Oil emulsion in pressurized container does good job of distributing light oil film on exposed parts, bore and action, top photo. When using a vise, protect gun with wood, cardboard inserts.

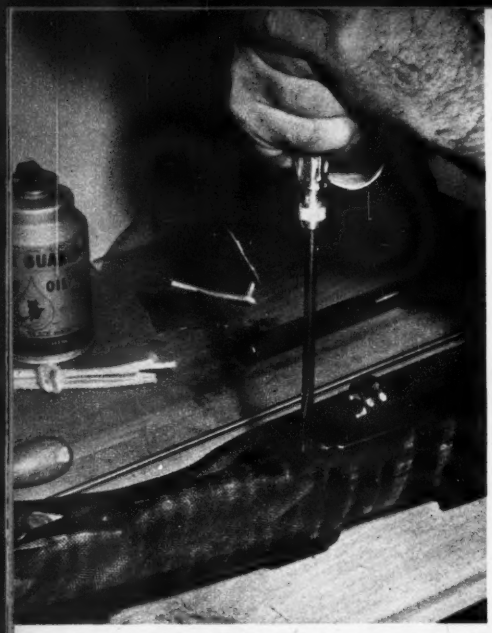
flirting with a big bill from his gunsmith, a long delay for repair and the possibility that he might have to replace his shootin' iron altogether.

The requirements are simple. All you need is a light *film* of oil on a *clean* surface. If you are a bit nutty on the subject of oil—and there are lots more like you—and you reason that if a little oil is good, a lot will be better, at least make certain that your oil bath goes on a *clean* surface. And this cleanliness involves not only the bore of your rifle, which effects its accuracy, but the action and any accessories. Here is the recommended procedure.

The initial step, if the job is to be a thorough one, is to check over the action of the rifle or shotgun. If any repairs are necessary the time to have them made is during the slack hunting period when the gunsmith has time and you can spare the gun.

Headspace, distance between the face of the bolt or breechblock and the face of the shell in the chamber, is of primary importance since improper headspace has been responsible for many injuries.

Not every shooter is equipped with headspace gauges which can assure him that his rifle has the .003 or .004-inch maximum necessary for safety, but everyone has a gauge at hand that will do the job. First take a "live" round and remove the



Big factor in a rifle's consistent accuracy is the bedding of the barrel. Screws can shoot loose so tighten them now, sight-in rifle next fall.

bullet and powder, using care not to damage the neck of the case. Then take an ordinary double-edge razor blade, which will measure .006 of an inch, or a Gillette thin blade which measures .004. Using two pairs of pliers, break off a roughly circular fragment of the blade that is slightly smaller than the base of the cartridge. Then place the cartridge in the chamber with the muzzle of the rifle resting on the floor. Place the disc made from the .004 razor blade on the face of the cartridge and slowly close the bolt or block. If it will not close, you do not have to worry about headspace. If it will close on an .006 blade, take the rifle to a good gunsmith. If it will close on two .004 discs the chances are you are in for a more extensive repair bill or even a new barrel, bolt or breechblock.

The next step is to examine the primers of some of the cartridges fired in the rifle. If the firing pin penetrates the primers to an excessive depth or if you can detect a rupture of the primer metal after examining it with a glass, you need a new firing pin. Those who have a habit of snapping the hammer of a gun frequently while there is no cartridge in the chamber often push back the shoulder on the firing pin inside the block or bolt which increases the penetration of the pin on the primer. A blown primer can cost you your vision, an ear or even your life and when there is no bodily injury, the receiver can be damaged. The chances are it will be an economy to let a gunsmith replace the pin for its cost is not excessive.

The next step, important to those who realize that "trigger-pull" has a real influence on rifle accuracy, is to test the "weight of pull" as well as its smoothness. A ragged, hard pull makes real accuracy impossible. The weight can be determined very easily. Take an empty Number 2 juice or vegetable can, punch a hole on either side of the open top and thread three feet of string through these holes so the can will hang from a loop. Place the butt of the gun on the edge of a chair with the muzzle pointing straight up. Pass the loop of string over the trigger so the can hangs free. Then have someone slowly pour sand into the can until the trigger is pulled. Weigh the can of sand and you know exactly how much pull you have. Then, if it is more than three pounds or is ragged, take it to a gunsmith for adjustment and the honing of the sear.

These are the three most important steps to insure safety, accuracy and smoothness of operation. If these three are satisfactory, cleaning is the next step.

First clean the rifle bore. For this a polished steel cleaning rod with a button and serrated tip is best. Pass a clean patch through the bore and examine the bore against a brightly lighted white surface, not against a lighted bulb for this is dazzling. If there are streaks of lead fouling, run through a patch that has been saturated with a good bore-cleaner. Follow this with a light but thorough cleaning with a copper or brass wire brush, one that is made for the caliber of the rifle or the gauge of the shotgun. When the bore is thoroughly clean, pass a clean patch through it, then several patches that have been dipped in gasoline or lighter fluid, followed by another dry clean one. When the bore is clean and gleaming either spray it with oil from a pressure can such as Gun Guard or pass an oily patch through it several times until the bore has a complete film covering it.

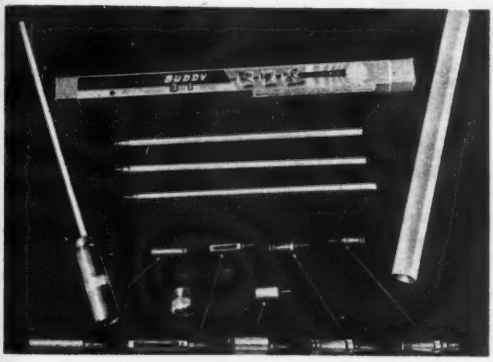
Some shooters have the bad habit of drawing a long wick or thick rope of oily waste into the bore and leaving it there for the storage period. This is not a sound or even safe practice. The cloth often will gather moisture and cause a rusted bore. Also, the careless shooter may forget it is there and fail to remove it before the gun is fired, in which case the only recourse is a letter of sympathy to the relatives.

You may have heard of the paraffin test given to those suspected of being involved in a shooting. [*Continued on page* 174]

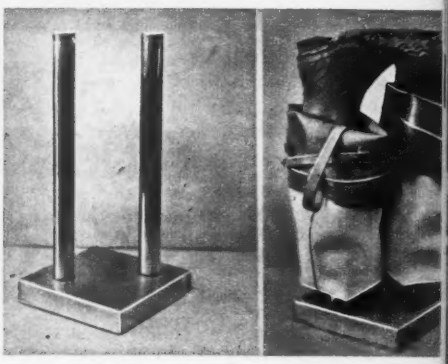
NEW for the SPORTSMAN

GAFFGUN lands fish with sharp teeth like pike, muskies, gar, is cocked and triggered with one hand. A steel plunger pierces jaw. Dorale, Cary, Illinois.

FISH KIT has fisherman's De-Liar with 28-pound measuring capacity, 42-inch rule and stainless steel knife with cork handle to make it float. Compass is inset. Abbeon Supply, Jamaica, N. Y.



BUDDY ROD is a lightweight all-purpose cleaning rod for rifles and shotguns. It has four soft brass extensions and five tip attachments, comes with dural case. Telematic Corp., Los Angeles, Calif.



BOOT DRIER also can be used for hunting shoes, arctics, moccasins, galoshes, mittens. Used on stove or radiator, heat travels up through chimneys, and circulates air. Kinox, Rutland, Vermont.

LEAD SIGHT for shotguns will help you improve your shooting in skeet, trap or field. It snaps on and off and helps gauge distance. But keep your gun moving. Lead Sight Co., Navarre, Minn.

DOWN COAT of Byrd cloth is water repellent, packed with 100 per-cent pure waterfowl down quilted to prevent shifting. Hand-warmer pockets. Scarlet or fawn. Woods Limited, Hull, Quebec, Can.

hobby

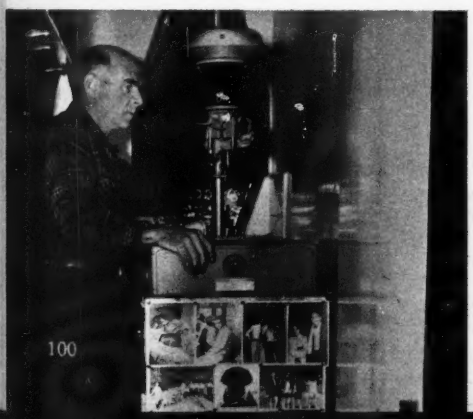
When helicopters flew transatlantic from Massachusetts, the General greeted them in Scotland.

Major General FRANCIS H. GRISWOLD AIR CRAFTSMAN

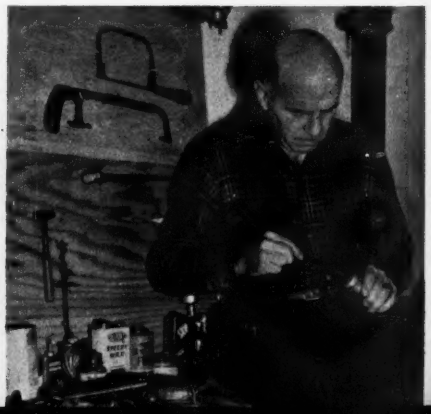
ONE day a few years ago a motorist drove into a Washington service station and asked a grease-covered mechanic to check a skip in his engine. With an expert's touch he replaced a bad plug and then accepted a seventy-five-cent tip from the motorist. The mechanic was Major General Griswold, U. S. Air Force, who had just dropped by to check his own car.

The general is quite a hobbyist. Now commander of the Third Air Force based near London, England, in charge of 45,000 men, 25 installations and an undisclosed number of the latest aircraft, he still finds time to fuss with his English autos, maintain his ham radio license, develop and print his own photos and putter in his workshop. •

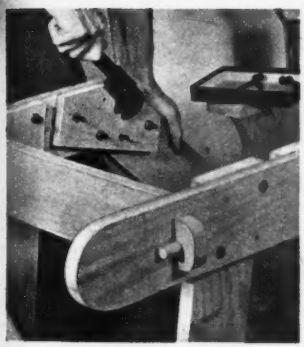
In the darkroom installed in his London home, Griswold "blows up" a few of his choicest pix.



His workshop is well equipped and qualifies him for title of mechanic and home handyman.



Contour Lawn Chair

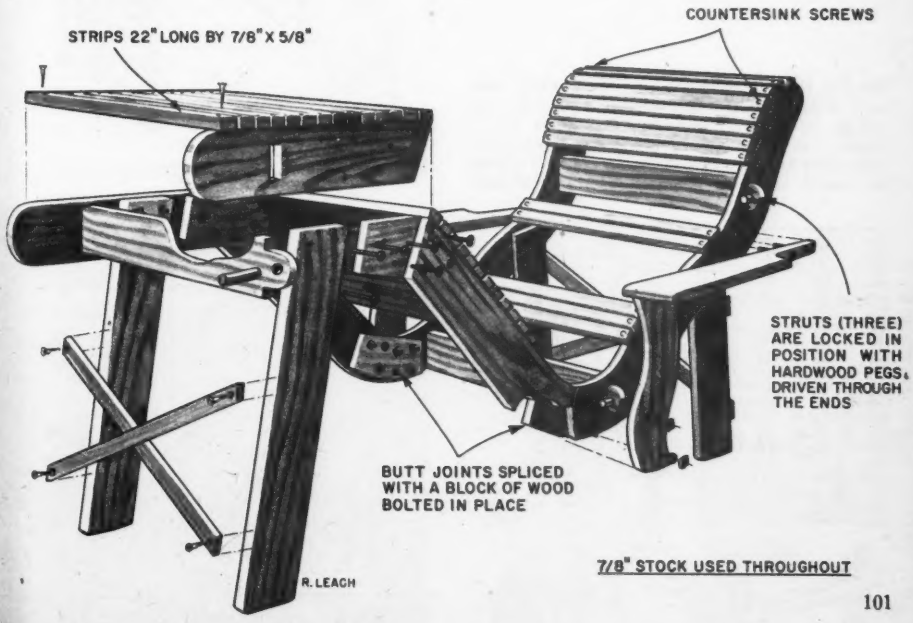


Contour design and elevated leg rest assure complete relaxation. Left: Bolted blocks splice the frame joints together.

THIS lounging chair is easy to make and provides for rest in a semi-reclining position that affords a degree of muscular relaxation which must be experienced to be appreciated. And, unlike many lounging chairs now on the market, it is light enough to be moved about easily and is not too cumbersome to pass through doorways.

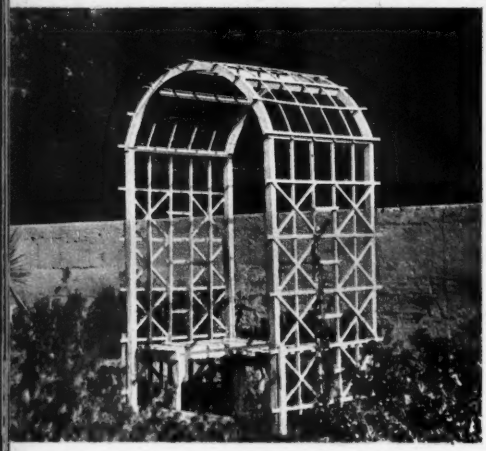
Construction is simple and the two main frame members can be made by three different methods. In the first method, the frame members are band-sawed in one piece from a plywood panel. Stock used is ⅞-in. throughout.

In the second method, three [*Continued on page* 151]

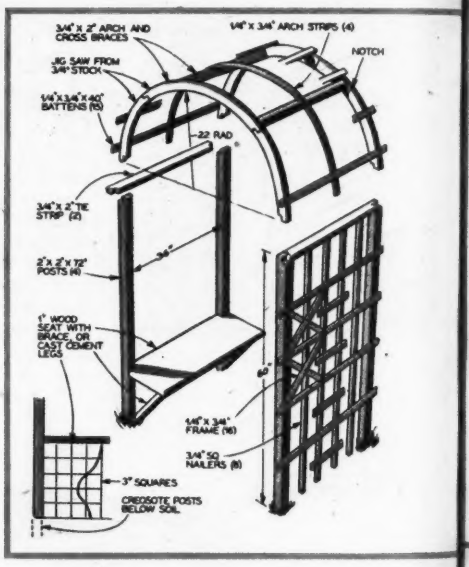


Breezeway and Trellis Designs

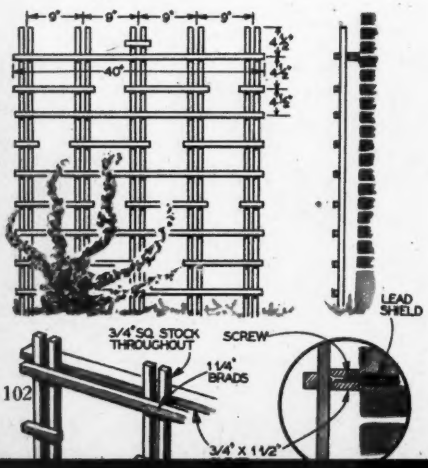
These long winter evenings are ideal for tackling one or more of these decorative projects that will add to the beauty of your garden or home next Spring when they're covered by vines.

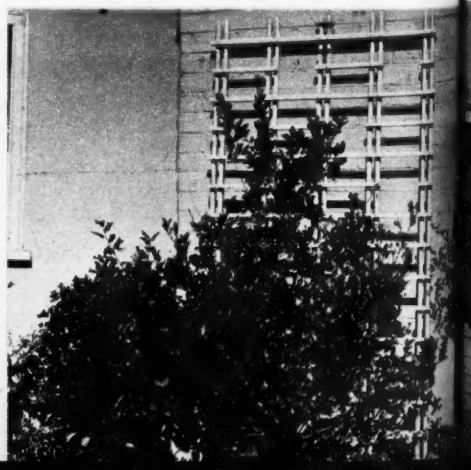


Made of very light framing, this arch trellis is as effective as one of heavier material and located at the focal point of your garden will be a definite scenic asset. Seats make it useful for rest periods when working in garden. The drawing at right provides easy-to-follow structural details.



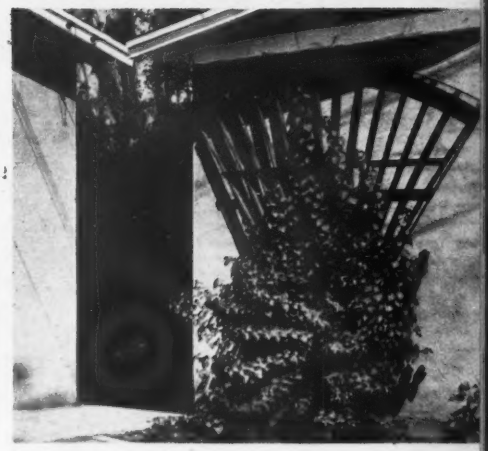
Suitable for attachment to any wall, either with nails in the case of wood walls or screws in lead shields for brick or concrete, this trellis has a simple, interesting pattern that makes it a favorite with many home owners. Holes for the lead shields are easily made in concrete with a star drill.



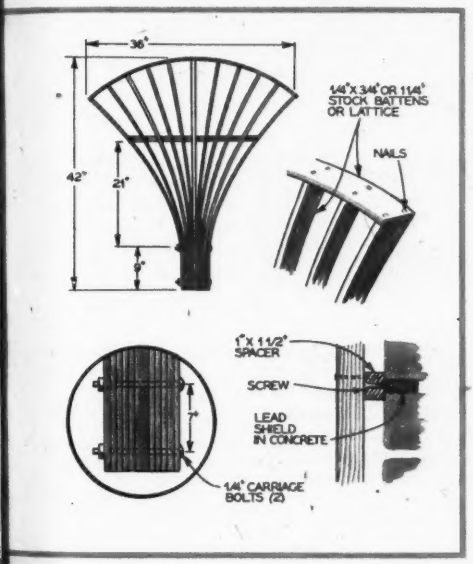


THERE are few homesteads that cannot be improved by the addition of a trellis or two at selected spots in the garden or alongside the outer walls of garages, storage sheds and other small structures. Best of all, they are extremely easy to build, cost little and require a minimum of spare time to build or maintain.

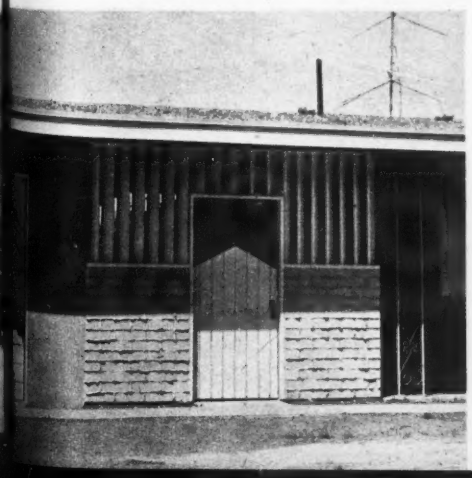
Trellises also make a perfect project for the craftsman who wants to put his workshop to limited commercial use. Make a few for your own use and show them to your neighbors. This publicity, plus a small advertisement in local newspapers, will be likely to bring you a few orders for Spring delivery from folks who appreciate the beauty of trellises but lack the time or tools with which to build them.—*Hi Sibley* •

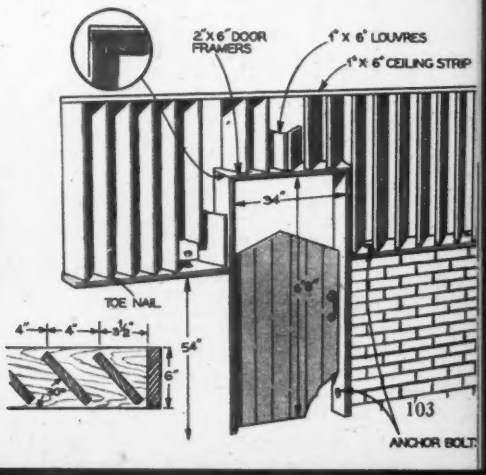


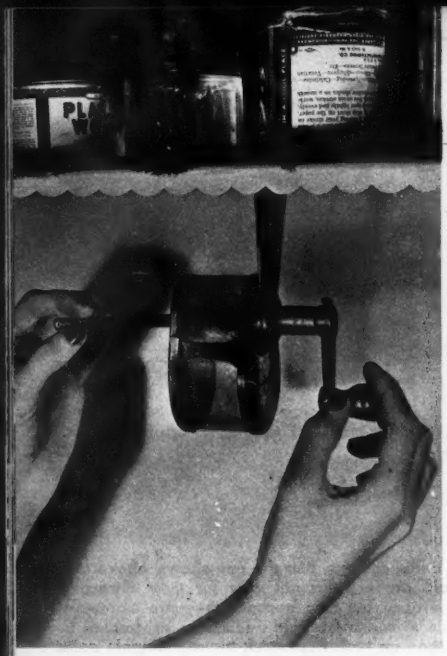
Fan trellis designs, like the one shown above and at left, are popular not only for their attractive appearance but also because they are extremely simple to construct. This trellis was assembled in less than an hour from stock battens, shingle nails and two carriage bolts. Excellent for walled areas.



An open breezeway offers a tempting exit from the premises for children or pets but it can be made escape proof, without sacrificing light or breezes, by building an enclosure with louvers. Construction is simple enough and cost is small. Inside screening will keep out summer insects.

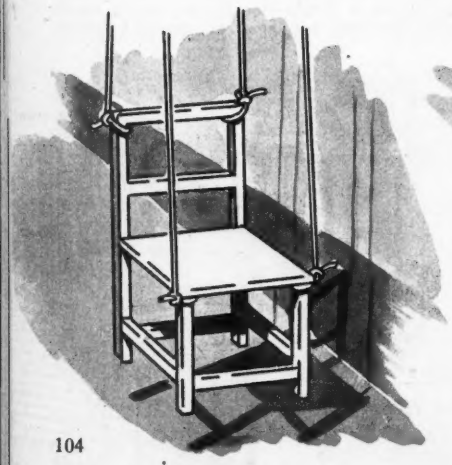


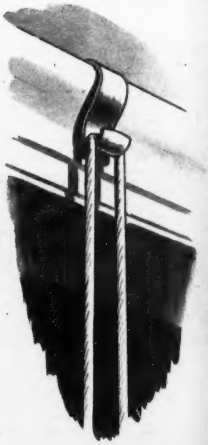


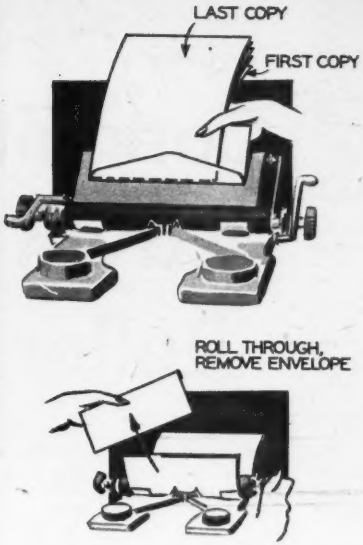


Mount a pencil sharpener under a wall cabinet or a kitchen or workshop shelf as depicted above. It is handy for use, yet is out of the way, and when it is removed the screw holes in the woodwork won't show. A supply of sharpened pencils can be kept on one of the shelves in an open-mouth jar.

Rig up an indoor swing for your child to use when it is disagreeable outdoors. The seat is a small play chair or a baby's car seat. The rope can be hung from either two screw eyes in the ceiling or two large picture-support hooks in the molding over a doorway. Both methods are shown below.





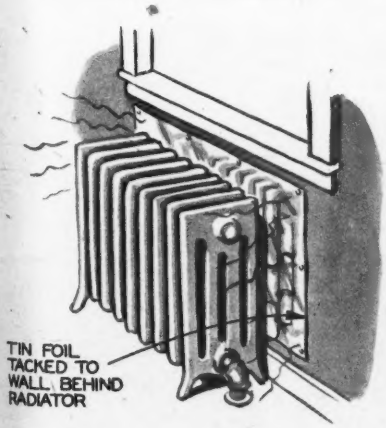


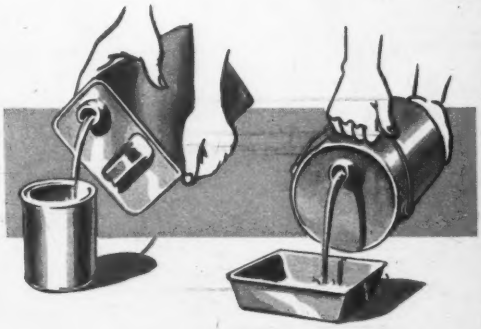
To keep paper straight when typing a letter or manuscript requiring several carbon copies, slip the ends of the first sheet, carbons, and second sheets behind the flap of a large envelope, put envelope behind the platen cylinder, and roll it through.

Rejuvenate your card table. Cover the old delaminated or scratched top with a panel of Masonite Leatherwood. Bevel the edges of the panel and secure to the table frame with wallboard adhesive and a screw in a countersunk washer at each corner.

Increase heat from radiators by installing reflecting insulation behind them. One effective material is ordinary, inexpensive tin-foil or aluminum-foil wrapping paper of the type used in kitchens. It can be thumb-tacked in place behind radiators.

Liquids flow smoothly from a full can and can be easily controlled if the container is held so the discharge hole is at the top. If held with the spout at the bottom, air that enters to replace the liquid causes burbles, making flow hard to control.





your house

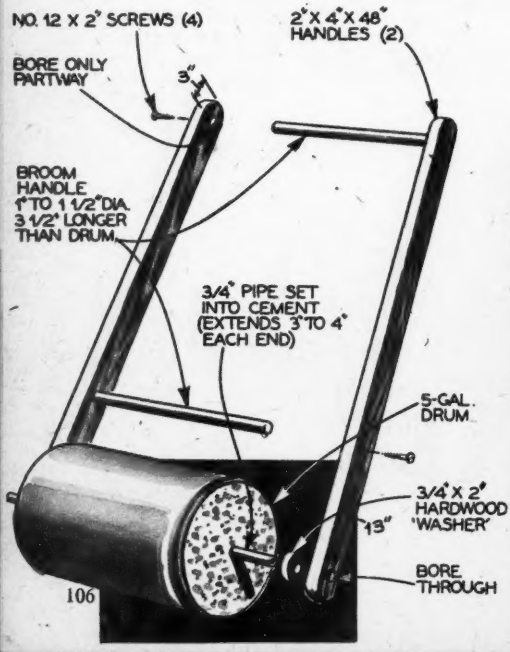
Concrete Lawn Roller

Although weight is low enough for easy use by woman or child, weight-to-width ratio is great enough for effective rolling of small plots.

Especially developed for small yards, this lawn roller is low in weight but efficient.

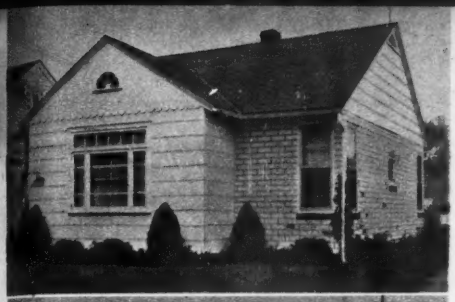
By Darrell Huff

ONE of the secrets of a good lawn is the use of a roller. Fortunately this helpful tool is easy to make. Its basis is a discarded 5-gal. can or drum. In addition, you will need a piece of ¾-in. pipe 6 to 8 in. longer than the drum, an old broom handle, a scrap of hard wood, four 2-in. No. 12 screws, two 4-ft. lengths of 2x4, and enough concrete to fill the drum. For the latter, buy a sack of dry-mixed cement and aggregate at any lumber yard and add water to it. Assembly, as shown in the accompanying drawing and photographs, is extremely simple. •

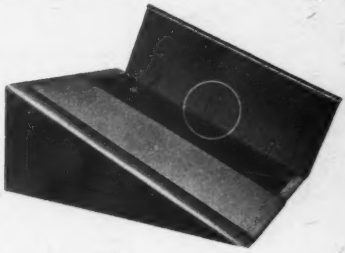


Cut holes in bottom and lid of drum, insert pipe in bottom hole, fill drum with concrete, and push the lid into place, thus accurately centering pipe.

New Products for your house



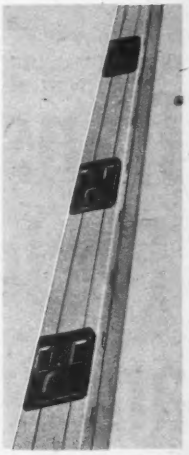
★ For more details about products on this page, write: Dept. K MECHANIX ILLUSTRATED, 67 West 44 St., New York 36, N. Y.



Above: Photos taken before and after application of Bondstone, a man-made stone covering, show how material adds beauty and insulation. Manufactured by Emco Products Co., Paxinos, Pa.

Lightweight steel cellar doors feature feather-action spring type openers (circle) which are also sold separately as optional accessories. Both are produced by the Bilco Co., New Haven 5, Conn.

By liquefying solid waste material, this chemical product (left) eliminates clogging of a septic tank for a year with one application. Harmless to pipes, metal, etc., according to Fermex Co., Newark, N. J.



Right: Steel raceway provides combination electric power and grounding plug-ins at convenient intervals for appliance or powered shop equipment. National Elec. Products Corp., Pittsburgh.

Powered by a 2 hp gasoline engine, this one-wheeled Choremaster garden tractor can be fitted with a 10 in. saw blade and table for wood cutting. Lodge & Shipley Co., Cincinnati 4, Ohio.

New submersible type pump can be used to empty sumps, basements, swimming pools and for other farm, domestic or industrial pumping jobs. Has a compact ⅓ hp motor. Jacuzzi Bros., Richmond, Calif.

Translucent Patio Roof and Awning

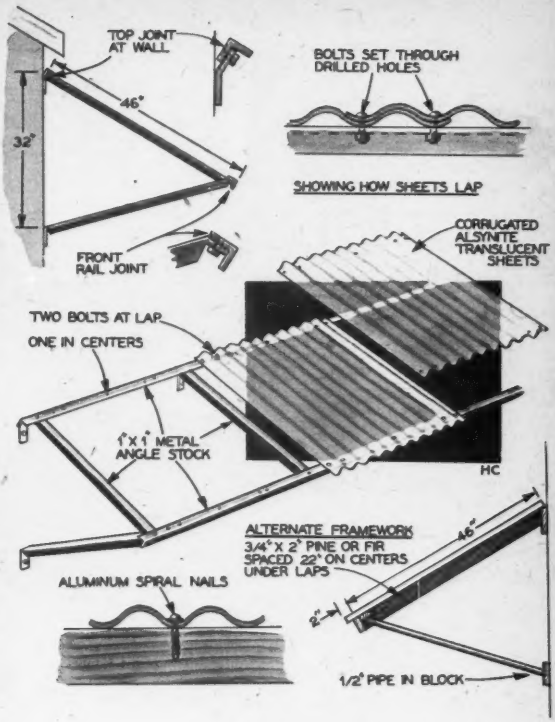
Make your patio roof and awnings different from run-of-the-mill types with this new and colorful sheeting.

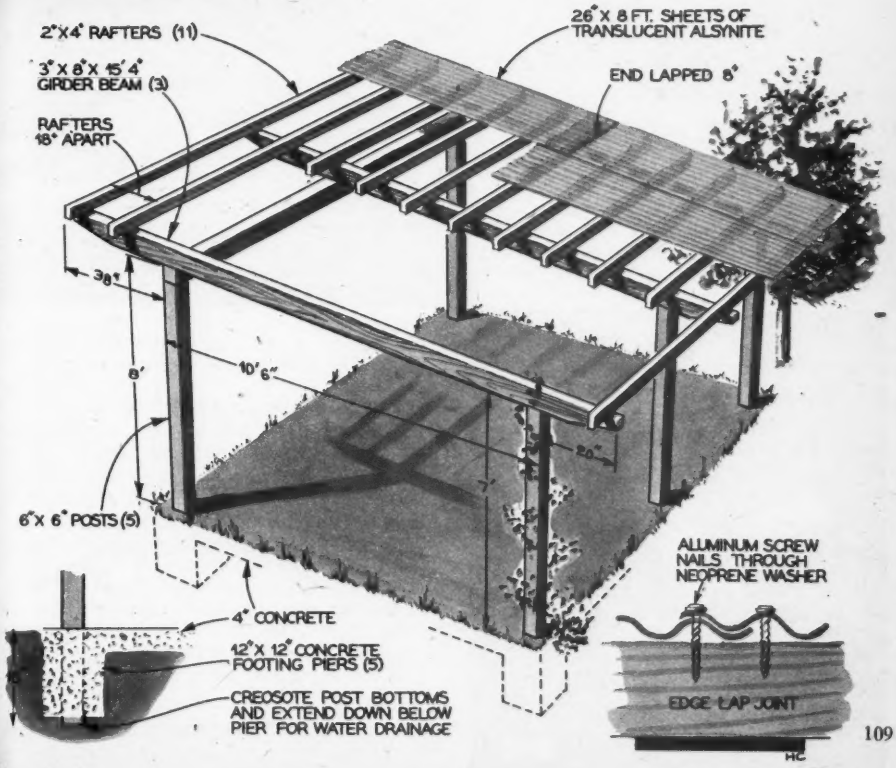
By Hi Sibley

PROVIDING an agreeable and colorful contrast with materials generally used for the purpose, sheets of a tough, translucent glass-like material called Alsynite are ideal for the construction of patio roofs and permanent house awnings. The sheets are available in several tints to harmonize with most exteriors and provide ample, cool shade by diffusing the sunlight.

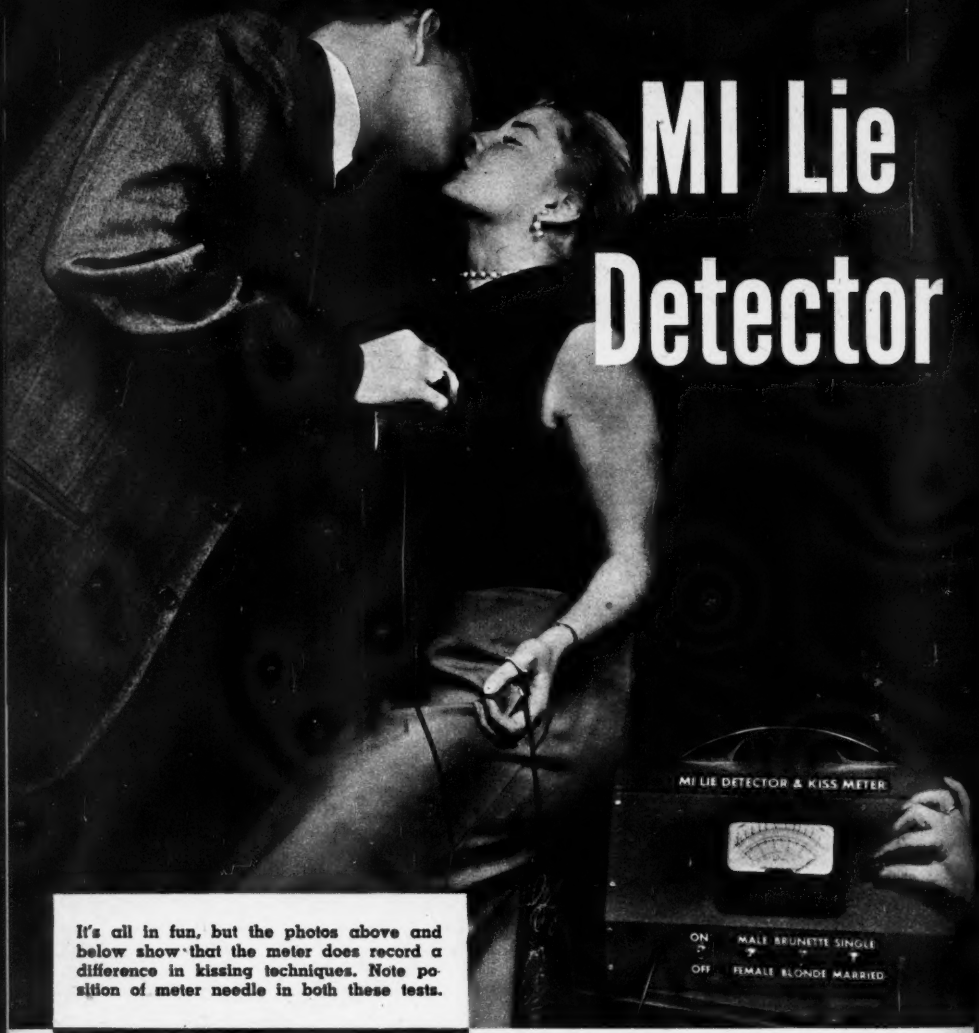
Alsynite weighs only eight ounces to the square foot, yet is strong enough to support 100 pounds over the same area. It is shatterproof and weatherproof and its light weight makes it possible to use lighter framing to support it.

Stock sheets are obtainable in 8, 10 and 12-ft. lengths and several widths, both corrugated and flat. They are easy to cut with an ordinary hand saw, so you can plan a roof or awning of any desired size if the sizes shown in the drawings do not fit your personal requirements. •


TOP JOINT AT WALL
46"
32"
FRONT RAIL JOINT
BOLTS SET THROUGH DRILLED HOLES
SHOWING HOW SHEETS LAP
CORRUGATED ALSYNITE TRANSLUCENT SHEETS
TWO BOLTS AT LAP ONE IN CENTERS
1"X1" METAL ANGLE STOCK
HC
ALTERNATE FRAMEWORK
3/4"X 2" PINE OR FIR SPACED 22" ON CENTERS UNDER LAPS
46"
2"
ALUMINUM SPIRAL NAILS
1/2" PIPE IN BLOCK


2"X4" RAFTERS (11)
3"X 8"X 15' 4" GIRDER BEAM (3)
RAFTERS 18" APART
26"X 8 FT. SHEETS OF TRANSLUCENT ALSYNITE
END LAPPED 8"
3'8"
8'
10'6"
20"
7'
6"X 6" POSTS (5)
4" CONCRETE
12"X 12" CONCRETE FOOTING PIERS (5)
CREOSOTE POST BOTTOMS AND EXTEND DOWN BELOW PIER FOR WATER DRAINAGE
ALUMINUM SCREW NAILS THROUGH NEOPRENE WASHER
EDGE LAP JOINT
HC

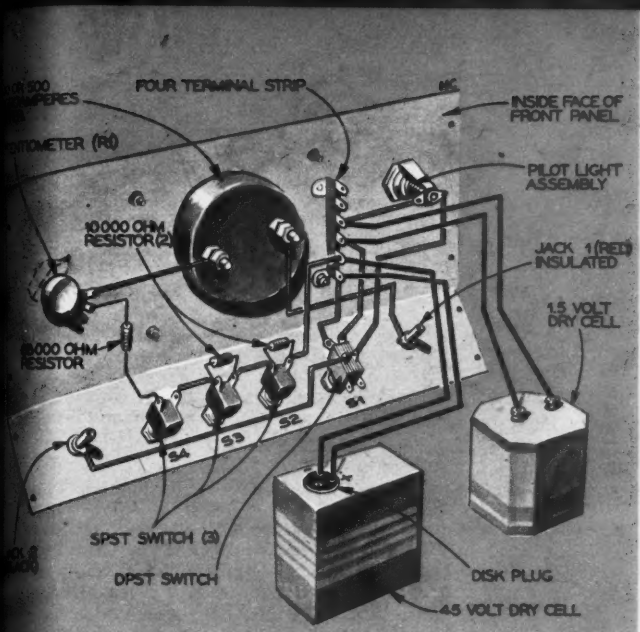
MI Lie Detector

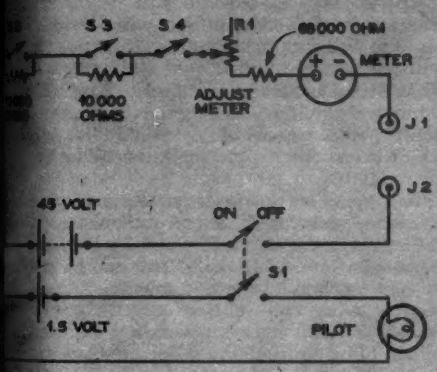


It's all in fun, but the photos above and below show that the meter does record a difference in kissing techniques. Note position of meter needle in both these tests.

When your pal boasts that he wows the girls with his kissing technique, check the truth of the matter with this novel device. It's a sure-fire laugh maker at any party, but it's useful for checking appliance circuits, too.

By Milton Nichols





1. The wire leads are connected to plugs that fit into jacks on the panel.

2. Spring wire loops are slipped over thumbs of person taking test.

3. Pre-set the needle to full right by touching loops together as potentiometer is turned.

"WHOOPEE! Look at that needle go up! Some cute number! Let me kiss her!"

If you want to liven up a party right from the start, build the MI Lie Detector-Kissmeter and try it on your friends for a gag the next time you gather for an evening's celebration. And when the party is over you can use the machine as a continuity tester for checking electrical apparatus, radio sets and circuits.

The MI Lie Detector-Kissmeter is based on the electrical resistance meter, a serviceman's old standby for testing radio sets and components, but it measures the resistance of the skin in these kissing and lie detection experiments. That is, the opposition to the flow of an electric current through the skin.

The unit is designed for use with large batteries, which cost very little more than smaller ones of the same voltage. This will assure long life, low cost and trouble free operation.

The maximum current consumed from the B battery is 4/10,000 of an ampere, which is so small that it gives the 45 volt battery practically no drain. Therefore, it should last almost as long as if it were left on a shelf. The pilot light drains but 1/20 of an ampere, which means years of service with a 4FH dry cell, or even flashlight cells.

Photos by Grayson Tewksbury

The attractive metal cabinet gives the completed testing device a neat, professional appearance.

All parts except the two batteries are mounted neatly on the back of the front control panel.

The machine can be used to check electrical appliances by connecting plugs to the wire leads.

Operating the device as a Kissmeter is very simple. The power switch is turned to ON, meter switch to ON, and the electrodes are plugged into the jacks (the electrodes are called test leads by the radio man). The springs on the leads (made from a movie projector rewind spring) are touched together and the needle adjusted to the right end of the scale by turning the Adjust Meter knob. An electrode is then slipped over the finger or thumb of each subject and at a signal given by you, they kiss.

If the label is left off the fourth switch (meter ON) you can snap that one down (and the meter OFF) until you think it's time to take a reading, razzing the subjects good naturedly in the meantime. If the Marion meter is used, the green scale marked LO can be said to read in Love Units. Call it LQ to mean Love Quotient, instead of the LO Ohms, which it really is.

As a Lie Detector the unit is used in the same manner, but both electrodes are connected to the same subject, one on each hand. In theory, the honest soul will be composed and the needle will be steady whereas the dishonest subject will perspire, his skin will conduct better and the needle will drift to the right.

Construction is very simple. The ICA cabinet (which was designed for amplifiers) has a removable front panel upon which all components, except the batteries, are mounted.

The layout is transferred to the panel and all holes carefully center punched and drilled to the indicated sizes. The meter requires a round 3 in. hole. This can be cut by any convenient method, but the easiest way is with a fly-cutter or 3 in. circle cutter. A radio chassis punch can be used by nibbling around the 3 in. circle. Or a series of small holes can be drilled and the 3 in. disc cut out with a chisel, after which the hole edges are filed smooth. As the meter overlaps this opening, a neat appearance will not be sacrificed even if the hole is not finished very carefully.

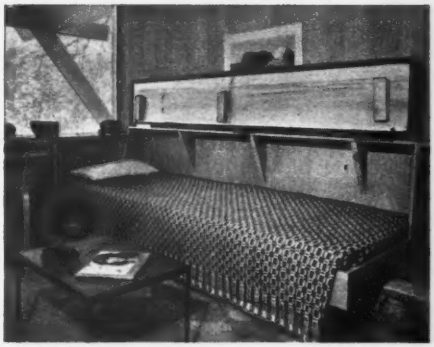
When all the necessary holes are drilled in the panel, cut off the burrs and smooth the openings with a file. Labels to suit your fancy, such as Male, Female, Blonde, etc., can be painted on the face of the panel or typed on thin paper and pasted in place above and below the switches. Switches No. 2 and No. 3 in the OFF position simply add a small handicap to the dial reading, enabling you to create meter readings that will produce laughs during kissing tests.

Mount all components except the meter, which is installed after all wiring and soldering are [*Continued on page* 151]

By day, the couch can be employed as either a cozy conversation corner or a lounge where one may loll about or nap in comfort.

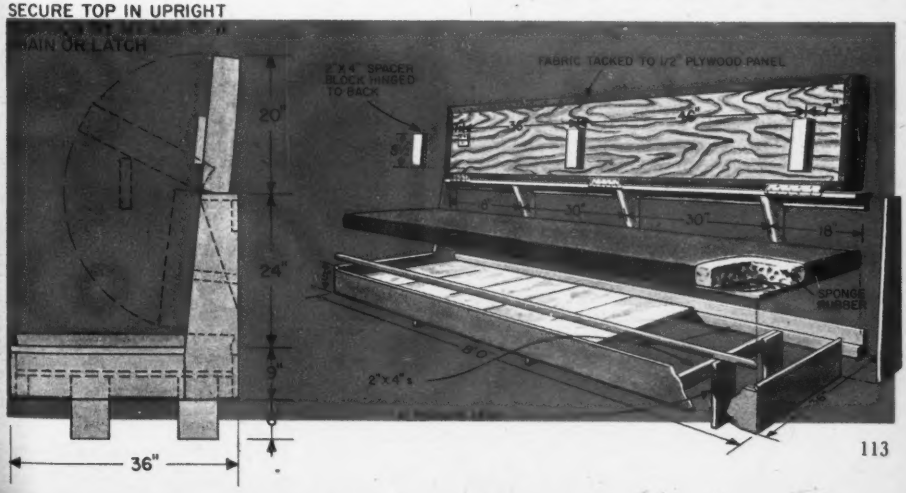
Convertible Couch

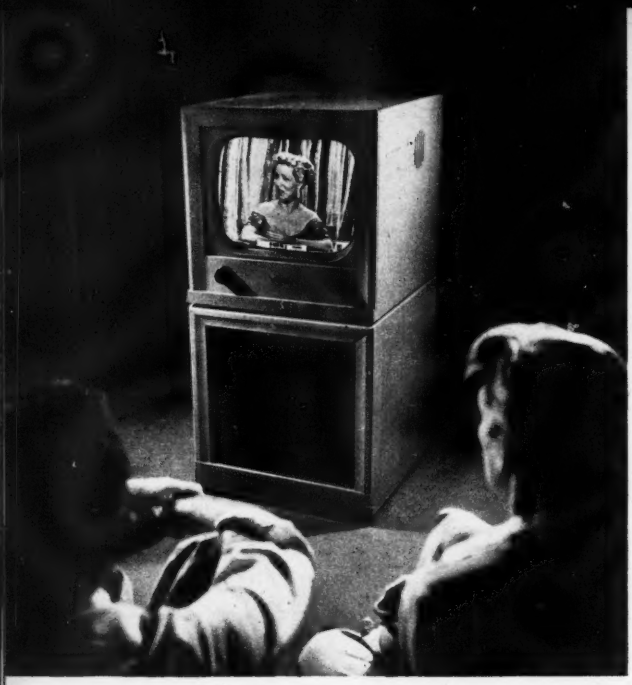
WHERE space is at a premium, as in most small modern homes and all vacation cottages, this built-in living-room couch does double duty, for at night it opens up into a comfortable bed. The dimensions given in the drawings are for the original shown in the photographs. This is an extra-long job made to utilize all of the space in one corner of the room. The dimensions can, of course, be altered to suit any available space, or they can be adapted to take a standard box spring. Use 2x4s to make the framework and standard shelving for the remainder of the couch. If you don't have a box spring, sponge rubber is the most easily handled upholstery material.—*Hi Sibley* •



At night, the couch becomes a full-length bed on which an emergency guest can be bunked down.

SECURE TOP IN UPRIGHT





MOBILE TV TABLE

There is no need to move the furniture to get the best viewing angle and distance if your TV set rests atop this decorative caster-mounted table. Speaker is at front.

Your table model TV set becomes a rolling console, with the added feature of a large built-in front speaker, when you complete construction of this project.

By Peter Gowland

IF you own a table model television set, or are planning to buy one, this mobile table should interest you. Fitted with rubber casters it can be rolled from one spot to another, or even from room to room if you make the antenna lead-in wire long enough. Best of all, the total cost for materials should not exceed $18.

In addition to providing mobility and an attractive appearance for your TV set, this table has space for installation of a large speaker which is directed to the front of the set instead of to the side as in most commercially built models.

The construction details are not complicated and you should be able to turn out a first class job after carefully studying the drawing and photos before tackling actual construction. Of course, all dimensions will have to be adapted to the size set you have.

Matching ¾-in. plywood veneer was used on the sides, but not on the top or bottom where a less expensive ¾-in. plywood was used. The side panels extend beyond the bottom section to allow for attachment of casters to the bottom.

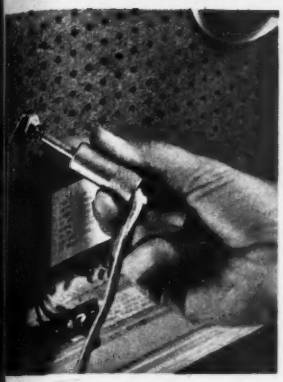
To provide added strength, triangular shaped pieces of ¾-in. pine blocks are glued and screwed into the four rear corners of the box-like structure. A ¾-in. plywood board is cut to fit into the front section of the box and a hole is made in this board to accommodate the size speaker you desire. I used a 12 in. speaker of the permanent magnet type that cost about $8 at any radio shop.

A matching molding strip can be bought at a local picture framing store. This strip is glued in place and then nailed, countersinking the nails and filling the holes with plastic wood filler. A strip of wood 3 in. wide and ½-in. thick is cut to cover the bottom, thus hiding the caster assembly.

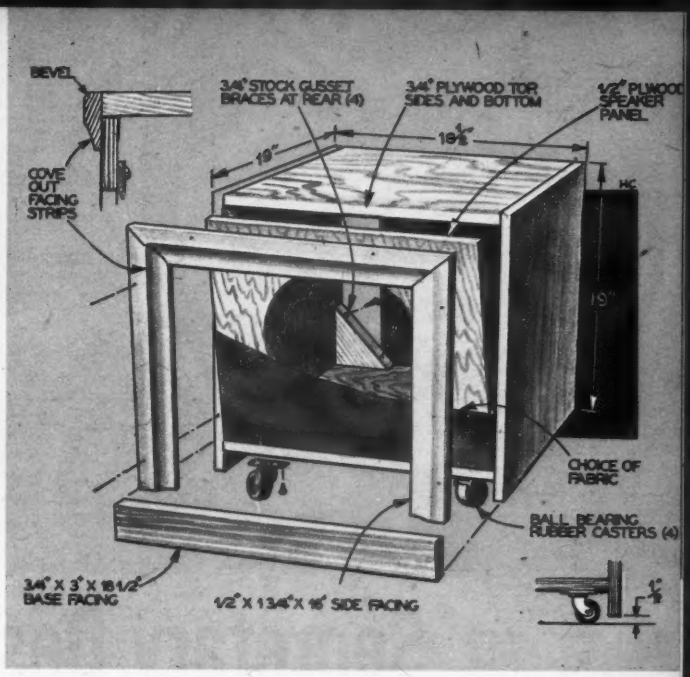
Four 2 in. rubber casters are screwed into position on the bottom section. These should be set in from the sides of the box to permit free rotation. Ball bearing casters are best for the job.

If your TV set has a blond finish, it will be necessary to lighten the wood used in the table. This is done with a two-solution commercial bleach. The first solution is applied in even strokes and allowed to dry after which it is wiped off with a smooth, clean dry cloth.

The second solution is applied and allowed to dry. If necessary, repeat the



When plug is inserted in jack at back of set it disconnects small side speaker and utilizes large one at front. Jack connections are made to the regular speaker wires in circuit.



operation to obtain a lighter bleach. Clear lacquer or varnish is brushed or sprayed on after the bleach has dried for an entire day.

The next step is to tack a piece of fabric over the front speaker board. I used a stapler to fasten the fabric to the wood, but small tacks or nails will do. The big speaker is then screwed in place.

A jack is used to connect the large speaker. When a plug is inserted, the jack disconnects the small side speaker and transfers the sound to the larger speaker in front. The jack and plug can be bought at any radio supply store and attached to your speaker wire. If you prefer, the small speaker can be disconnected permanently in favor of the larger speaker. In this case it will not be necessary to install a jack in the circuit if you hook up the big speaker directly to the speaker circuit wires. Be sure that the speaker you install is of suitable capacity for the circuit.

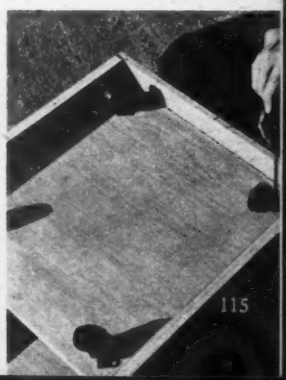
The TV set must not be placed flush against the table top because there is a ventilator in the bottom of the set to help dissipate the heat.

There are few table model TV sets that will not be improved in appearance when mounted atop this table and the resultant console model becomes a piece of furniture that you'll be proud to show, and you can move the television set to any desired spot in the room. •

Front of table consists of ¾-in. plywood board in which a hole is cut for mounting the speaker.

Speaker is screwed to inside surface of the board and front cloth is then stapled in place.

Mobility is provided by screwing four fully rotatable 2 in. casters to table bottom.



Simplicity of design and sturdiness of construction make this an excellent project if you need a spacious, attractive desk.

By E. C. Horst

Secretary Desk

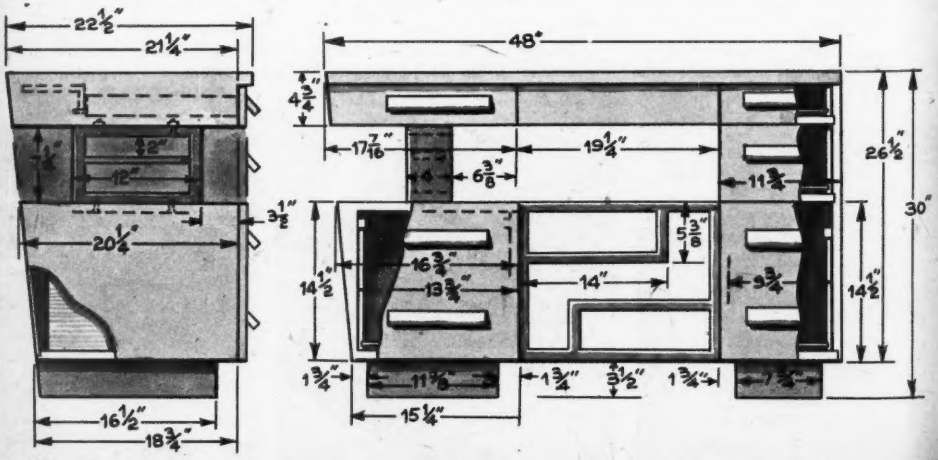
WITH a few pieces of plywood, a circular saw, a sander and a minimum of hand tools plus necessary hardware, you can build a small secretary desk for your den or study room that has features unsurpassed by a large office desk.

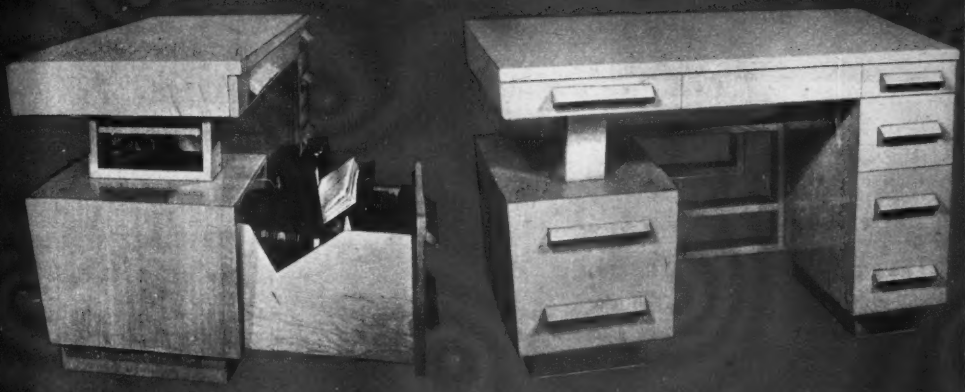
This desk is so constructed that you can pull out the left hand top drawer, insert its sturdy brackets into their respective holders as shown in the photos, and the drawer converts into a neat typewriter stand that is just the right height for comfortable typing.

When you have finished using the portable typewriter, remove it and release the stand brackets from their holders so that the drawer can be put back into the left hand compartment. Once more your desk takes on a conventional appearance.

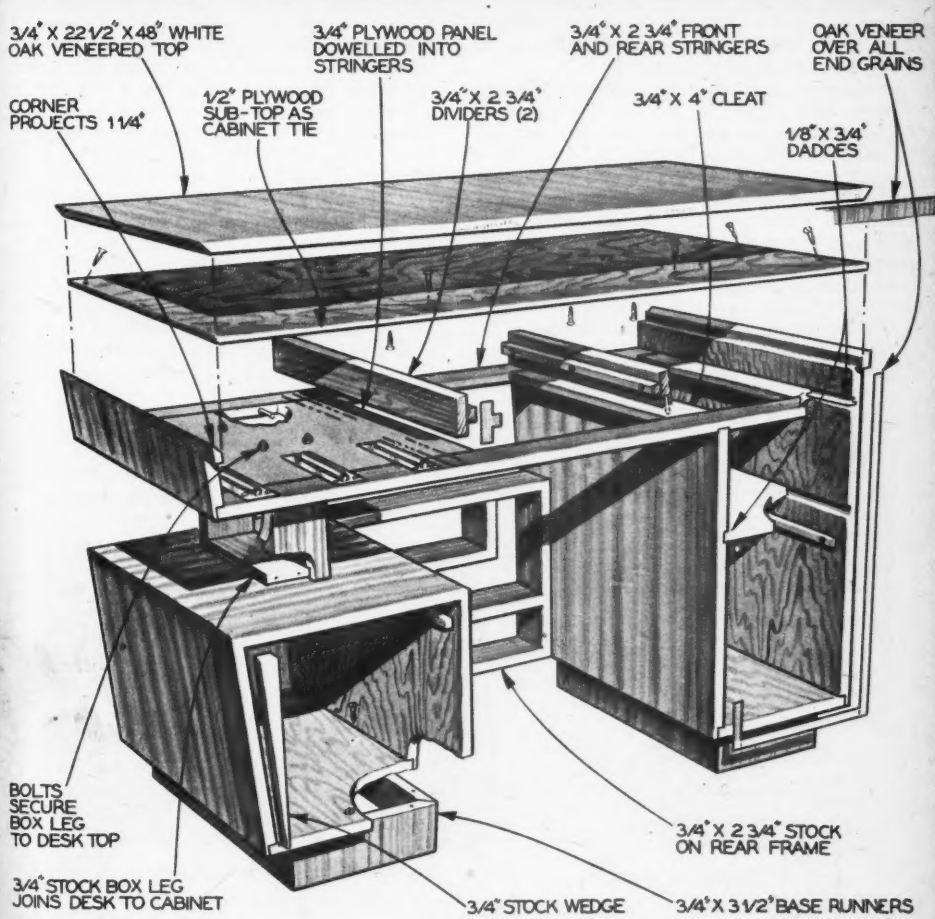
Another advantage of the drawer stand is that it provides additional work space when needed. That is, the stand level is approximately even with the desk top when the drawer is pulled out but not lowered to accommodate the portable typewriter.

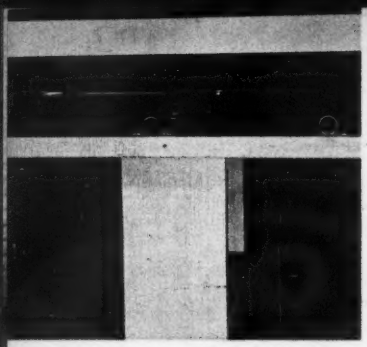
The right hand drawers are made for regular 8½x11 in. stationery. You can use the bottom right drawer for a vertical 8½x11 in. file inasmuch as it is 14 in.



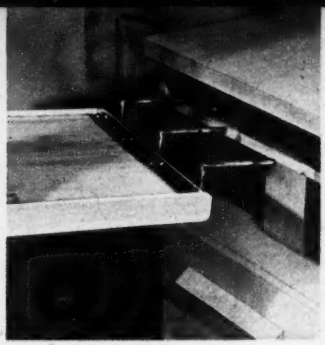


Left: Side view of completed desk showing the 7" tapered back and spacious lower drawer. Front view highlights modernistic design.

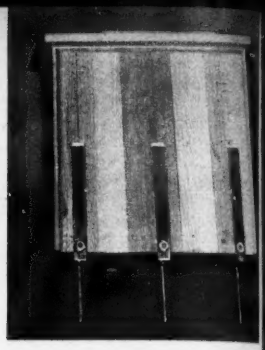




Close-up showing arrangement of bracket holders for typewriter stand. Wooden pieces lend added support to hold machine's weight.



Typing stand brackets being inserted into the holders shown in photo at left. Safety catch on one prevents accidental release.



Bottom view of typing drawer stand showing the ¾-in. side runners and brackets. The center bracket is notched for locking.

deep. The center top drawer is 17½x20x2 in., while the left bottom drawer provides space for a standard metal lockbox for keeping private records. In addition, it accommodates a standard horizontal 8½x11 in. letter file. There are five drawers in all, besides the typing stand.

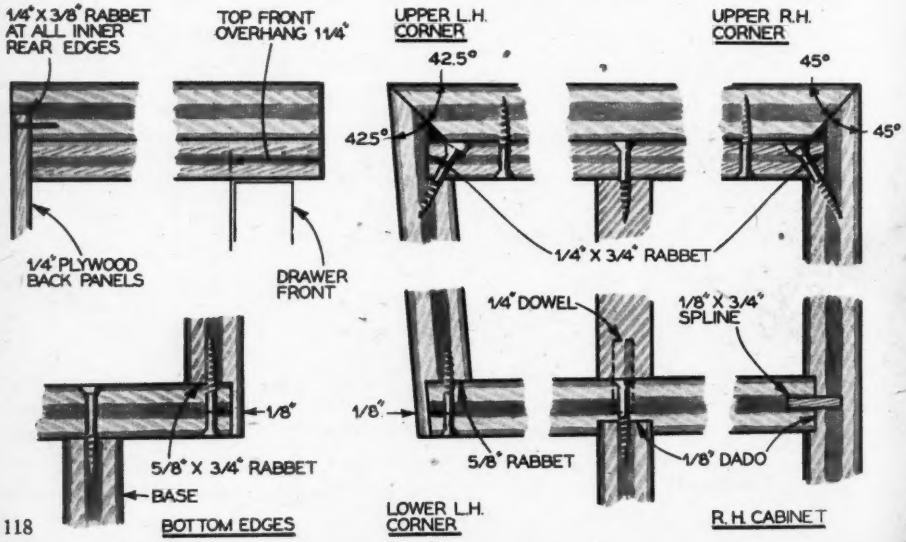
The desk is 48 in. long, 22½ in. wide and 30 in. high. The modern design makes it easy to keep clean as there are no irregular beads or frills to catch dust and dirt. It is small, yet has the rigidity and sturdiness of a large office desk. It doesn't shake and vibrate when you are typing or writing. This is assured by using reasonably thick plywood instead of the thin frame and panel wood usually used in building a small desk for the home.

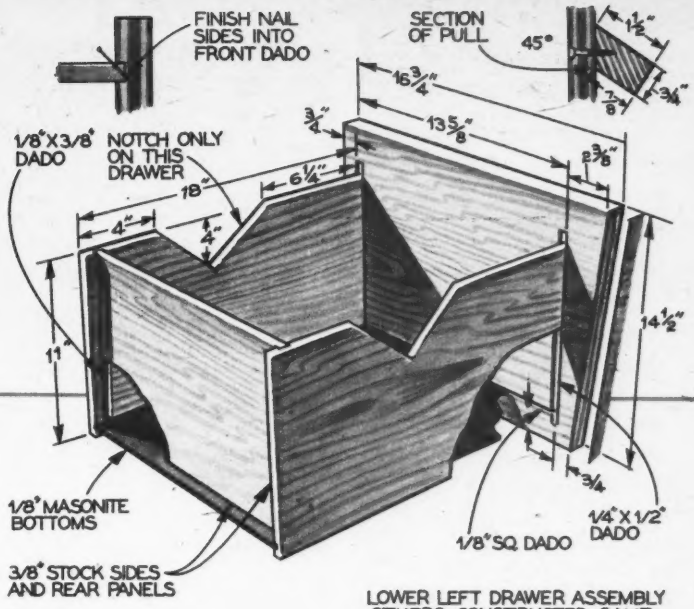
The versatility of a circular saw lends itself to all of the necessary cutting operations, even the tapered left side and back requiring only the proper adjustment and angling of the saw blade.

The desk shown is made out of ¾-in. white oak plywood, blond finished. All butt ends of the plywood at the front of the desk and around the drawer heads are veneered to give the appearance of a piece of solid hardwood furniture. Hardwood plywood has a beautiful finish just as it comes from the lumber dealer, requiring very little sanding before applying the varnish or whatever finish you prefer.

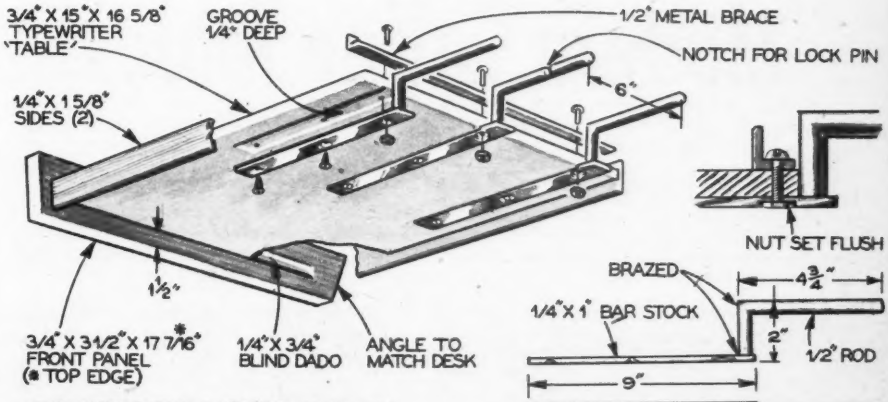
Assembling the desk is comparatively easy. First build the left and right hand drawer compartments as separate units. Then follow a sequence of assembly by uniting these sub-assemblies with the top drawer and desk top pieces. Note that the ¾-in. main top panel is put on last.

The 1¼-in. complete top consists of two pieces. The lower [*Continued on page* 150]

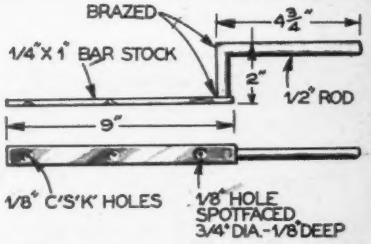




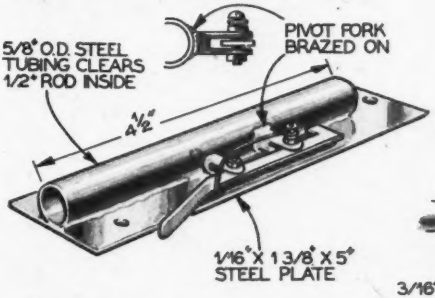
LOWER LEFT DRAWER ASSEMBLY
OTHERS CONSTRUCTED SAME



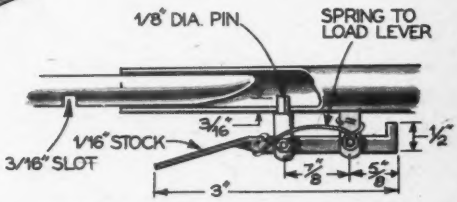
TYPEWRITER TABLE DRAWER ASSEMBLY



BRACKET ARM DETAIL (MAKE 3)



BRACKET HOLDER (MAKE THREE)
(ONLY CENTER HAS LOCK)



DETAIL OF LOCK ON CENTER HOLDER (ONE)

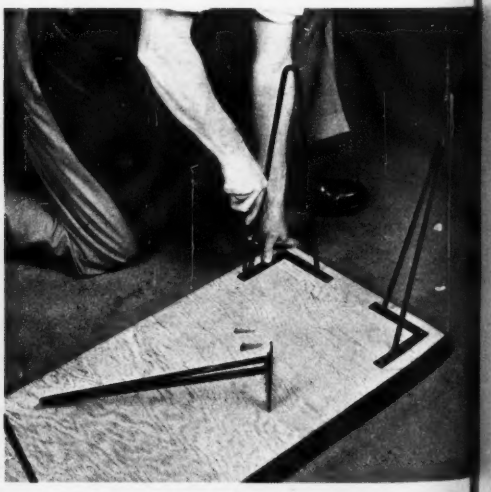
Left: When not in use for serving coffee or cocktails, the upper panel of this decorative table provides extra magazine space. Above: How wrought iron legs are fitted to bottom panel.

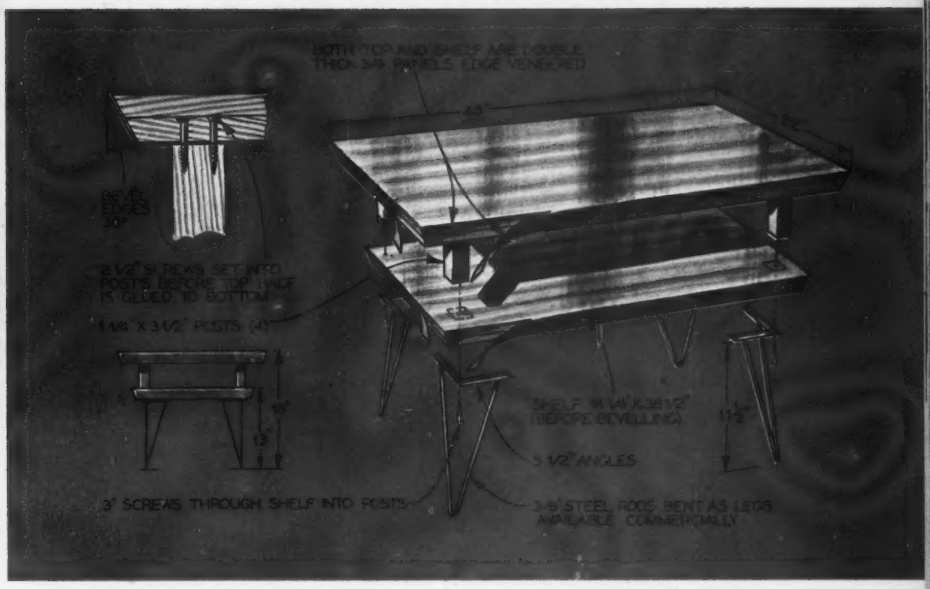
Modern Coffee Tables

Wrought iron legs, available in many sizes, simplify construction of these highly attractive tables.

Equally attractive is this single panel table. Panels for both tables are made of two layers of ¾-in. plywood, one of walnut and one of fir.

It is simply a matter of a few minutes work with an ordinary screwdriver to attach the novel legs in place at each corner of the completed panel.

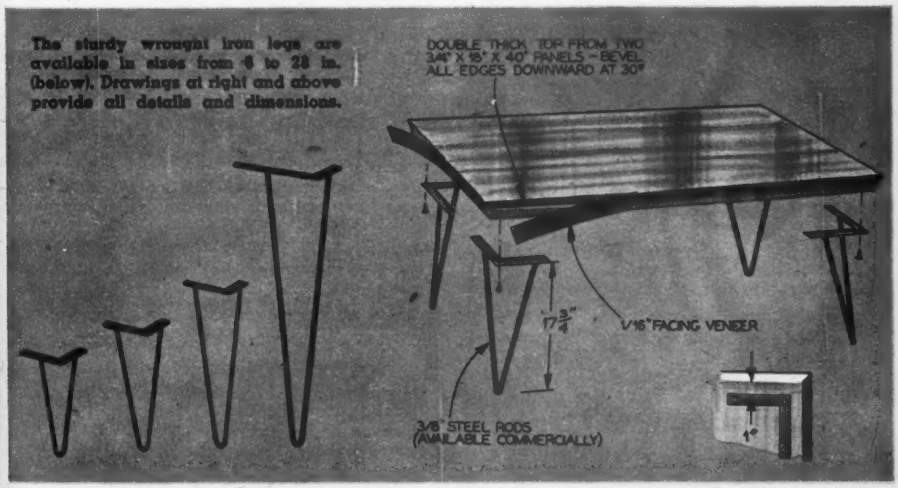




FEATURING hairpin type legs of wrought iron which provide sturdiness and a distinctive appearance, these coffee tables have a modernistic aspect that is pleasing to the eye.

The legs are packaged and sold in sets of four by the E. F. Lawrence Iron Works, Los Angeles, Calif., and can be attached in a few minutes with an ordinary screwdriver, cutting down overall construction time. They are obtainable in a dull black finish in six sizes from 6 to 28 in. in height, suitable for tables, benches and desks.

One table has a single panel, while the other has an upper and lower panel. In each case the panels consist of a ¾-in. layer of walnut plywood superimposed upon a ¾-in. layer of fir plywood, affording strength with lightness. The edges are beveled 30° downwards and faced off with $\frac{1}{16}$-in. veneer. Follow the drawings for dimensions and other construction details, or alter the dimensions to suit your personal needs and desires.—*Paul Brown* •

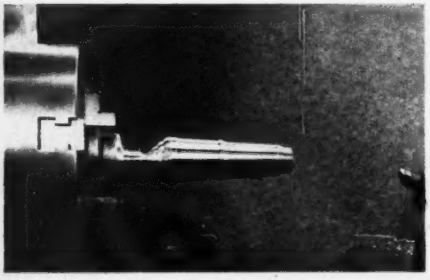


Photos by Grayson Tewksbury

table carronade

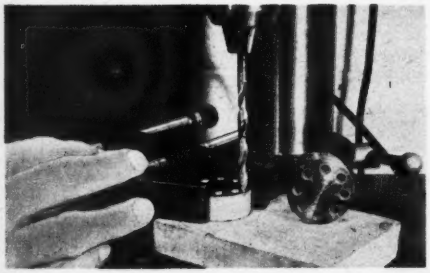
You lathe owners will get a bang out of duplicating a rugged artillery piece used on both land and sea in the War of 1812.

By Robert H. Dalton

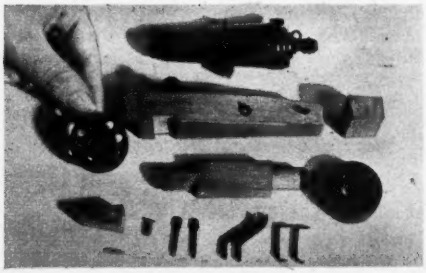


View of barrel after completion of lathe work. Leave extra stock on for gripping work in vise.

If you decide to make barrel in one piece, next step is making a pilot hole to form the cascabel.

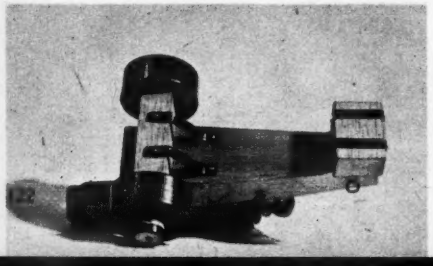


Forming the wheels. Eight holes are drilled in a piece of stock 1¼ in. in diameter by ½ in. thick.

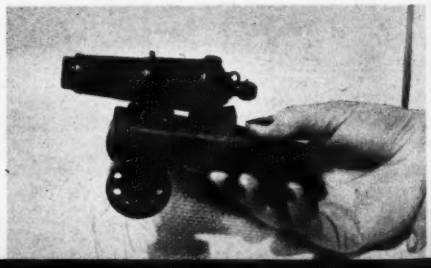


Here are all the elements before assembling. Wooden parts have been varnished, metal lacquered

Inverted view shows position of axle braces and slide straps, all made from .015-in. shim stock.



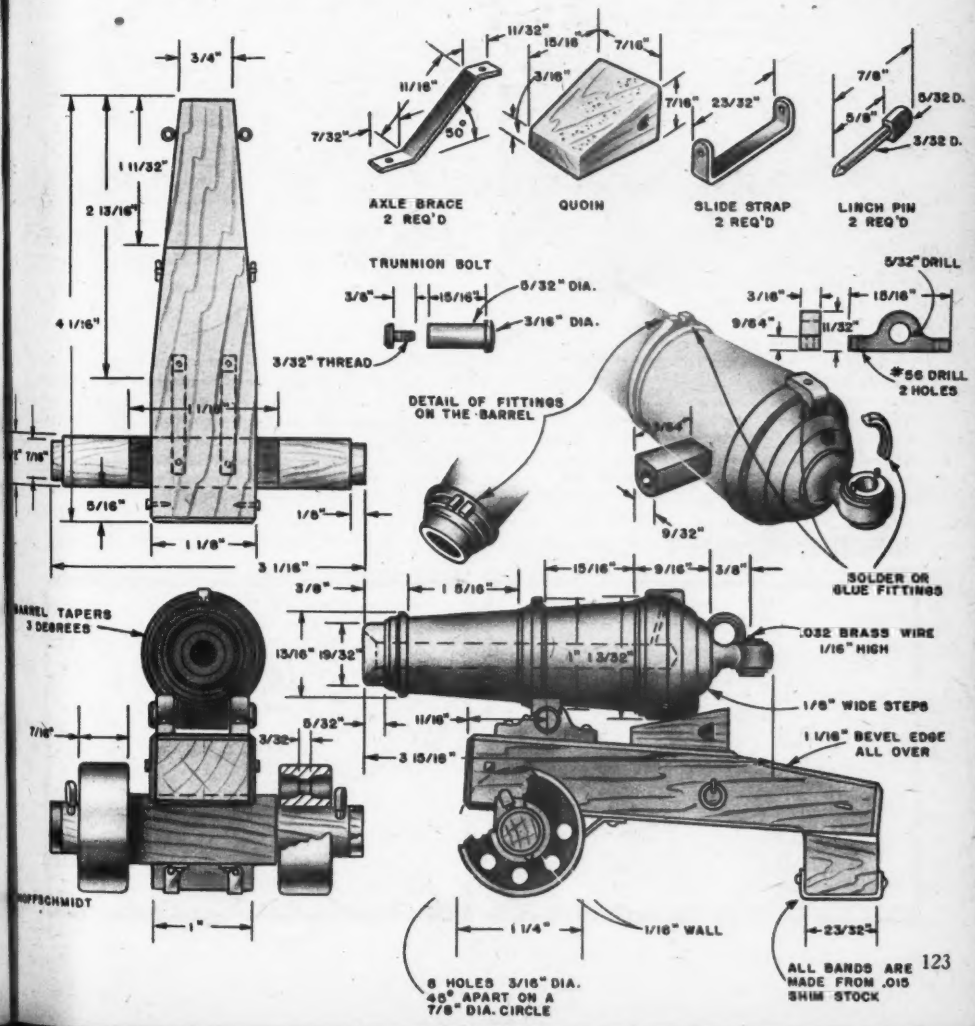
Hand gives you an idea of scale. If you have no metal lathe, barrel may be turned from hardwood.



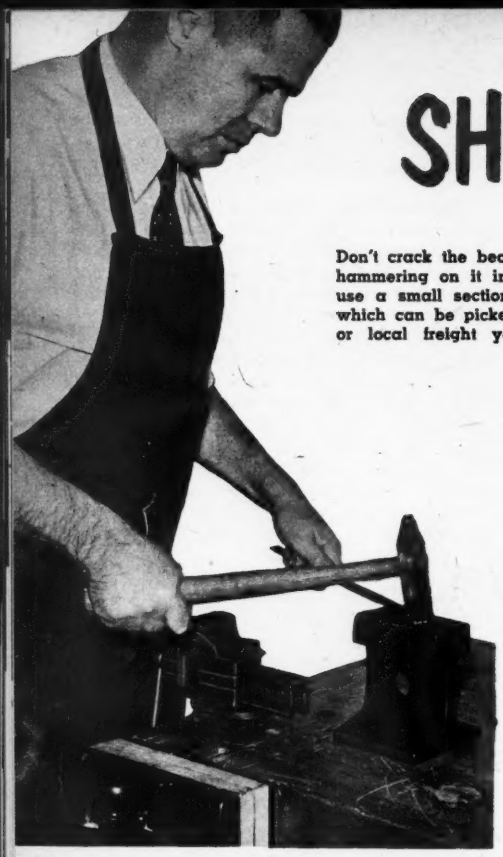
THIS 32 pounder carronade is an exact miniature scaled ¾ in. to the foot of an 1804 model mounted on a common garrison carriage. Measurements were taken from an original at Old Fort Henry, Kingston, Canada. The name carronade originates from the fact that these guns were made in the Carron Foundry in Scotland.

Let's start with the barrel, since it requires the most work. I used 1⅛-in. brass rod, but hardwood may be employed, if desired. Turn the barrel to the dimensions indicated in the diagram below, but leave the breech end intact. Now clamp the partially finished barrel to your drill press table, and drill a ⅛-in. pilot hole in the center of the cascabel, which is the small projection behind the breech. Without removing the barrel, insert a ⅜-in. end mill in the chuck and mill flat to $\frac{5}{32}$ in. above the barrel's centerline. The cascabel can be turned separately, then soldered on if you use metal stock, or glued if you employ wood.

The breeching ring is next turned on the lathe and attached. Barrel is clamped upside down and a $\frac{9}{32}$-in.-wide slot is milled or filed to fit the elevating loop. Latter can be soldered or screwed to the barrel. Other small details are balsa wood cemented in place. They could also be made of brass and soldered on. With a No. 64 drill, drill two holes $\frac{3}{16}$ in. deep in the cascabel. Insert .030 brass wire and file until they protrude $\frac{1}{16}$ in. Saw off the stock and file the cascabel round. This finishes the barrel. The tapered portions of the barrel are turned with compound set at three degrees or 1¼ in. to the foot on a taper attachment. [*Continued on page* 156]

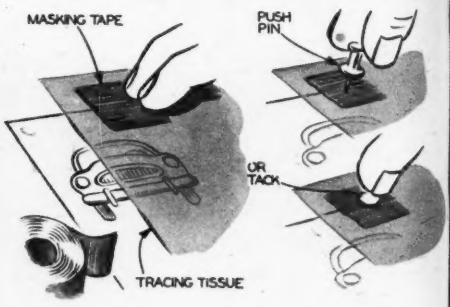


SHOP KINKS



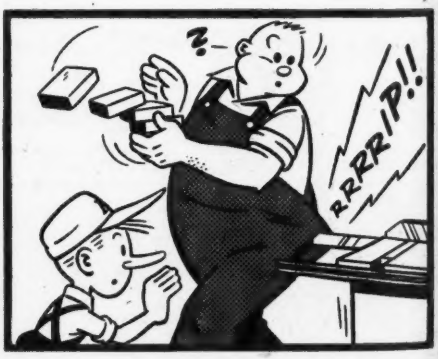
Don't crack the beam of your workshop vise by hammering on it in place of an anvil. Instead, use a small section of discarded railroad track which can be picked up at most any junk shop or local freight yard for a very small cost.

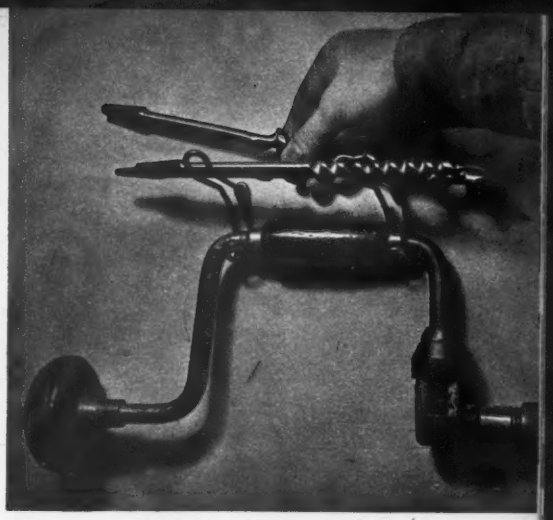
Putting small squares of masking tape at the corners of drafting tissue and pressing it for good adhesion prior to tacking down with pins will prevent undue shifting of the tissue and thus eliminate the tearing which usually occurs.



Dear Reader:
We'd like to introduce you to a new character, Freddie Fumbles, whom you will now find in the pages of your favorite magazine. He's a likeable, well-meaning chap, but at times given to doing things the hard way. But he'll learn, especially if he'll heed the advice of our MI Guy. We'd like to enlist your aid in helping Freddie Fumbles. Send in your idea of what constitutes a good short-cut, time-saver or safety device in your work, whether it be in the home, shop, office or farm. Each tip accepted will be paid for at the rate of $10. Naturally we cannot acknowledge or return the ones we cannot use. However all will be carefully read and evaluated. (Those which we can use in other departments of MI will be paid for at our regular rates.) Send in your ideas, a post card will do, to Freddie Fumbles, *Mechanix Illustrated* magazine, 67 W. 44th St., New York 36, N. Y.

FREDDIE FUMBLES

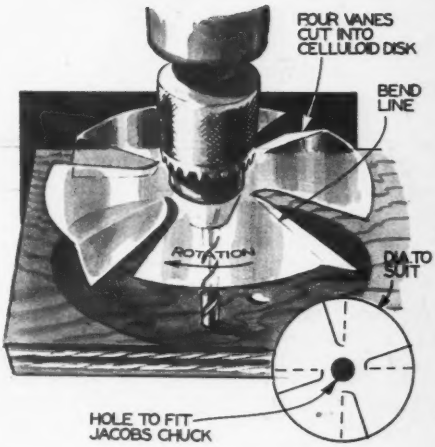




Above: A tape-padded nutcracker makes a handy tool for opening, without damage, those bottles and cans of glue and other items that are fitted with tight caps too small to be gripped firmly with your fingers. Renew the taping from time to time.

Upper Right: An inexpensive but efficient rack to hold your brace and bits can be made by obtaining two wall type coat hangers and screwing them to the workbench close enough together to support the tools. Rack is equally useful for other tools.

Cut a circular piece of celluloid to pattern shown at right, bend the blades at an angle and attach to your drill press chuck. As the chuck rotates, the blades will blow all wood dust away from the field of work, enabling you to speed up operation.



A Rubber Crutch Tip On The Rip Fence Guide Will Save Your Clothes

MI WORKBENCH AWARD WINNERS

Perfect satisfaction with telescope and tripod mount built to MI plans is reported by craftsman Cullen G. Scarborough of Dothan, Ala., who fitted it with 330 power lens. He plans to add a gear drive to both axis and setting circles in the near future.

Powered by a 6 volt starter motor and battery, this tiny racer has a wood chassis and hand formed metal body. Built for son John by Ed Zoellner of Rochester, Minn., its speed is held to 5 mph and is controlled by a button at the driver's feet.

A ¾-hp lawn mower engine and scrap parts were used by father of Sidney Hiatt of Carthage, Mo., to build this tractor which is capable of pulling 3-passenger trailer. It is painted green and yellow and bears a famous name in reverse—Deere John.

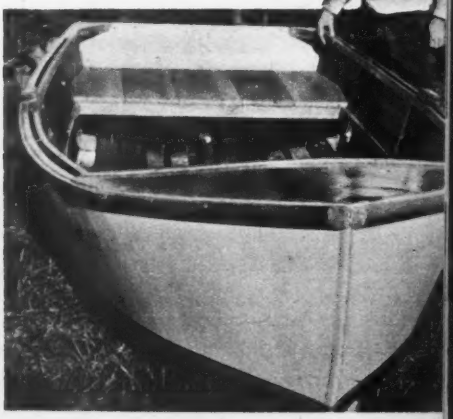
Postage stamp comparison accents size of this miniature .41-caliber Remington derringer which is a copy of the weapon that was used in the murder of President McKinley. All parts were cut from solid steel by Kenneth G. Sonntag of San Antonio.

Speed of 80 mph is claimed for this home-built car by Robert Valeski of Tucson, Ariz. Engine is 68 hp 4 cyl. Continental, radiator is from a Whippet, transmission from an Austin and wheels are midget racer type. With a sense of humor, he calls it "Peep."

Each craftsman whose project is shown here receives a $5 check and a Workbench Award Certificate. How about sending us a photo and description of your latest project? If you aren't a winner, you may still receive a Certificate Of Merit. Photographs of your workshop are also eligible for an award. Send entries to MECHANIX ILLUSTRATED Workbench Awards, 67 West 44th Street, New York 36, New York.

Scale model of historically famous covered wagon constructed by E. R. Crobtuy of Pasadena, Tex., is 4 in. wide, 9½ in. long. It has hardwood wheels with hubs turned on lathe. Note the water barrel mounted alongside body and the brake lever.

Skylark is one of four small boats built from MI plans by Cliff Huddleson of Eureka, Calif. He is now adding to his fleet by building MI's 16 ft. Comet runabout. Photo of Cliff and his boat was taken by his son Neil who helps father with construction.



Headboard For Relaxing

IF you aren't quite satisfied with your bedside facilities, you'll be interested in the many features incorporated in this headboard. The back rest is slanted at just the right angle for reading in bed. Adequate storage space is provided for books, magazines, cleansing tissues, medicines, and your alarm clock. The doors to the side cabinets hinge down so they double as night tables.

Inside the cabinets are night lights. In our headboard, we used 7½-watt bulbs in screw sockets, but it would be preferable to install convenience outlets and plug in a couple of the new little all-in-one night lights. Note that part of the bottom of each cabinet is cut away so the lamps throw light on the books below.

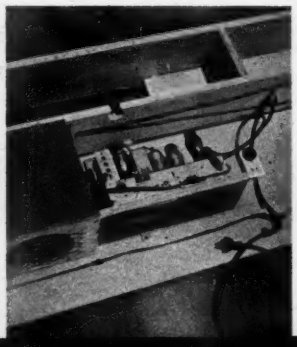
The built-in radio is not an expensive luxury. We bought a seven-tube set from a secondhand store for $5. It had a cheap, battered cabinet, but since we were interested in just the chassis, this was no deterrent.

Construct the headboard from ¾-in. mahogany with ¾x¾-in. cleats and backing pieces of ⅛-in. tempered Masonite. Where it isn't feasible to use cleats to support the shelves, small angle clips are employed. As shown in Detail A, these clips are also used as cabinet-door hinges.

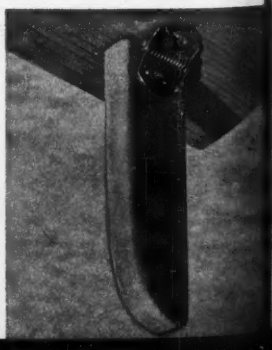
Paint the Masonite backing pieces before fastening them in place. Since mahogany has a nice color and an attractive grain, it needs no stain—simply finish it with a filler and spar varnish. •

Sliding doors along top of headboard hide bedside accessories. The hinged cabinet doors hold bed-time repasts.

Rear view. Hole in shelf above radio is for a wire to attach radio to clock.

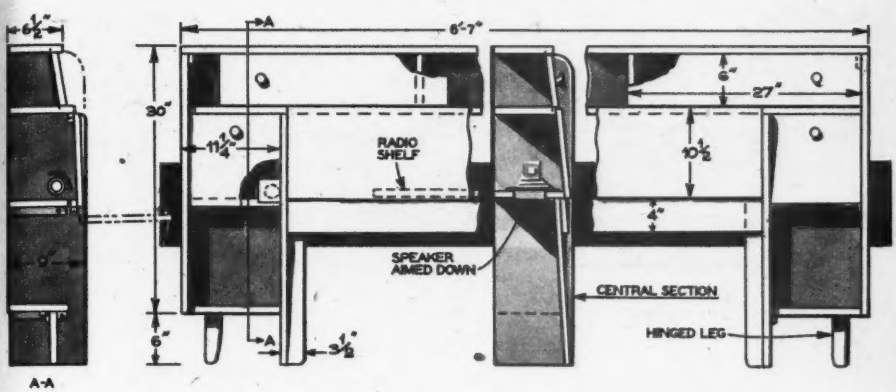


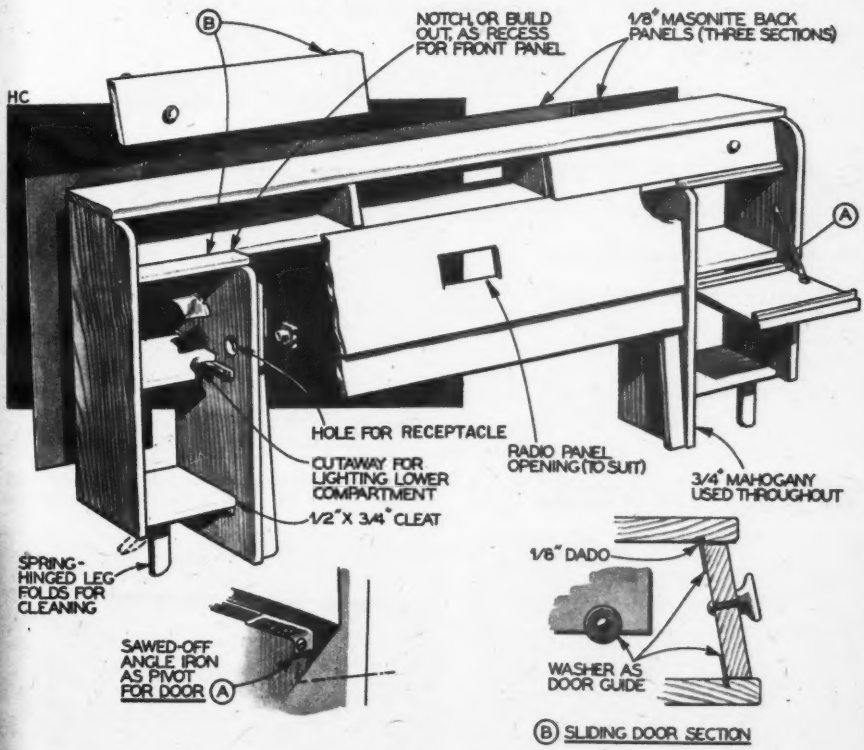
Front legs are attached with spring hinges, can be folded up when using vacuum cleaner.



Despite its usefulness, this headboard is simple enough for the craftsman to duplicate with ease.

By Robert L. Hoppough

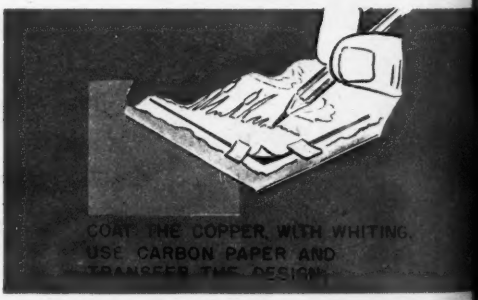




Etched Copper Tray

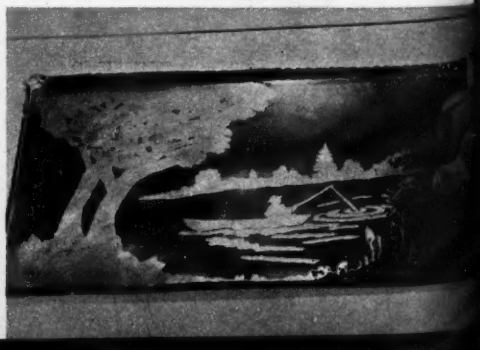
The various skills of etching, sketching, metalworking, and woodworking are embodied in this easy but thorough project.

By Elma Waltner

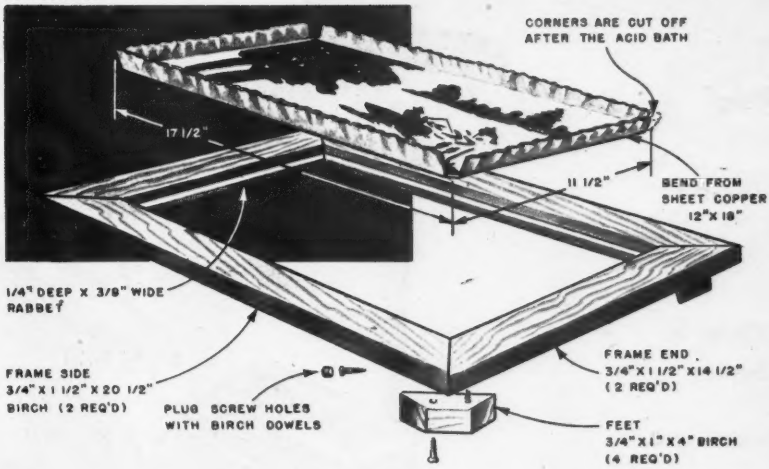


Lay out design on paper the same size as tray. Transfer sketch to copper as described in text.

Apply asphaltum varnish, then add nitric acid. Bright areas are those protected by asphaltum.



HOFFSCHMIDT

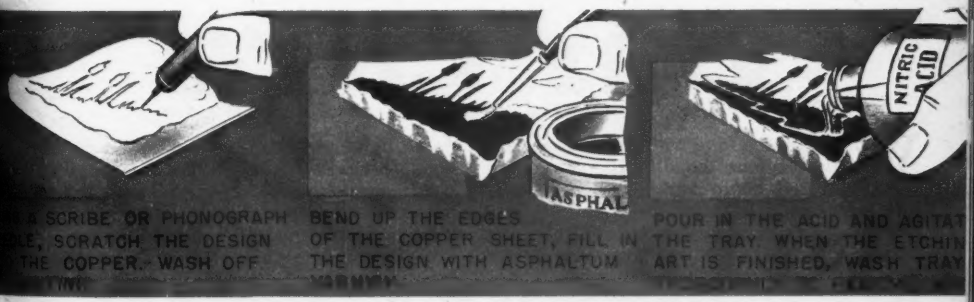


THIS gleaming tray in copper and wood with an etched picture on the metal surface makes an interesting project, whether it is used for serving or as a decorative piece.

The tray itself is a sheet of heavy copper 12x18 in. With a pair of pliers turn up the edges ¼ in. You may not be able to bend a square corner, but that's unimportant. The corners will be cut off later. What is important at this stage is to have edges turned up enough to make a shallow pan into which to pour your etching solution.

Make a drawing that relates to your particular hobby. Lay out the design on a sheet of paper just large enough to fit the bottom of the tray. One precaution: your sketch should have few fine lines, for these are hard to paint in cleanly for etching.

Clean the surface of the metal with fine steel wool and [*Continued on page* 154]



Wash surface clean of the acid solution and burnish the copper tray surface with steel wool.

Tray is retained in its hardwood frame by the rabbets, may be lifted out easily for cleaning.

CARE WILL SAVE YOUR CAR

Better Lighting

By Fred Russell

If you wonder if your headlights are bright enough, a quick check with this tester will give you the picture.

car care

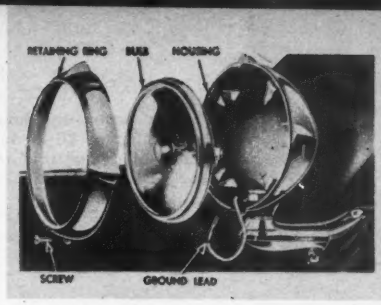
WE'VE come a long way from kerosene and acetylene headlights. In addition to sealed beam lamps which throw low, wide beams to turn highway night into day, modern cars have upwards of 20 additional lights of various types and sizes. They all need attention. A directional signal that fails may land the driver in a hospital. A dead light around the oil pressure gauge may prevent a motorist from knowing that his oil supply is dangerously low. A trunk compartment light that failed to go on when one tourist stopped on the road at night to change a tire nearly cost him his life.

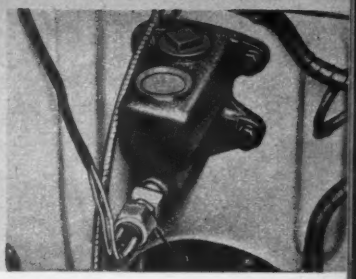
Better lighting thus covers a lot of territory. I asked the owner of a current car to name ten lights, other than the head and taillights. He quickly listed the glove compartment light, two for the instrument panel, four for the directional signals, the dome light and the stop lights. So far so good, but when I asked him for more he began scratching his head. I had a list in my pocket.

He had overlooked the telltale flasher for the directional signals, the back-up light, two lights for the clock, two for the radio, one for the speedometer, the trunk compartment light, the front compartment door lights and the hood trouble light. Several others turned up as we checked around. We had forgotten a special signal light which keeps flashing if the ignition is "on" with the parking brake set. Another one overlooked was the high beam indicator light on the instrument panel. Two additional instrument lights had escaped us, likewise the rear license plate light. I won a buck by remembering the hood orament light.

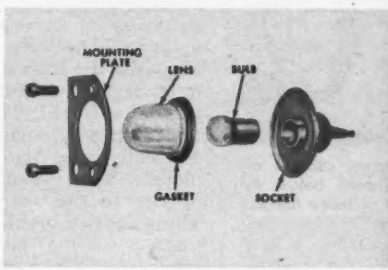
The guy who said that variety is the spice

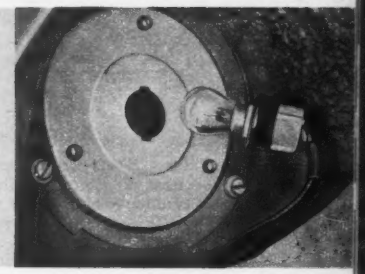
Right: If auxiliary light is dim, check the ground lead. Far right: A defective stoplight switch will hold stoplight on and cause the battery to run down quickly





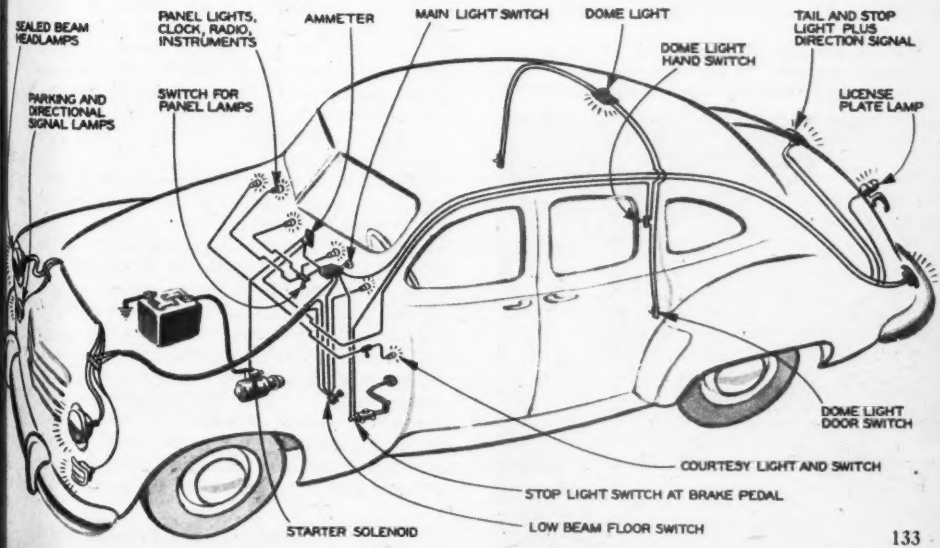
Right: Exploded view of license-plate lamp. Far right: Learn how to disassemble all of the lights. Depicted here is a combination taillight and stoplight.

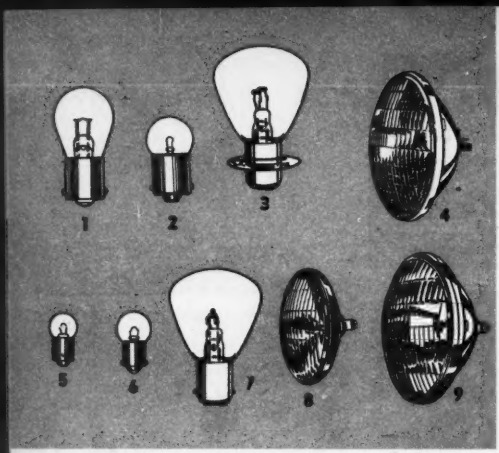




Right: Adjustments of headlights vary, but on most cars the lamp rim is first removed. Far right: A sealed-beam headlamp always has three electric contacts.

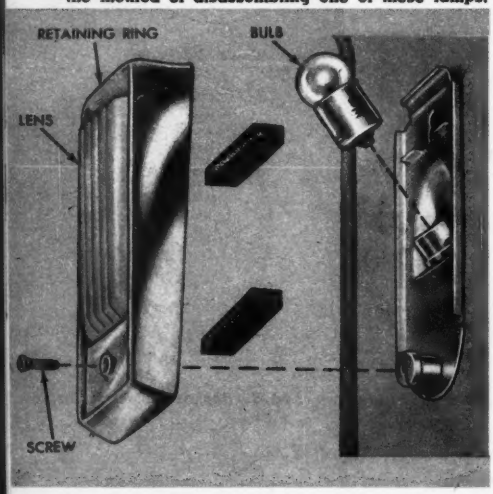
Photos courtesy Ford Motor Co., General Motors Corp., and Westinghouse Electric Corp.



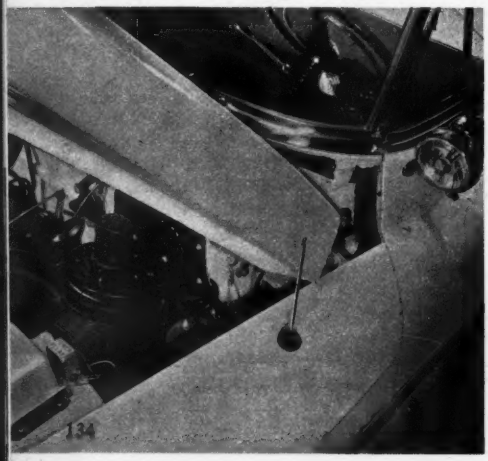


Typical bulbs and lamps: (1) for interior, stop, and taillights; (2) for interior, instrument, license, and parking lights; (3) prefocus-base type for spot, fog, and headlights; (4) sealed-beam headlight; (5) for indicator lights; (6) for parking and instrument lights; (7) for spot, fog, and headlights; (8 and 9) for fog lights. The candlepower varies widely.

Pillar and dome lights are frequent sources of trouble because of vibration. Shown below is the method of disassembling one of these lamps.



Below: Autronic Eye (lower left corner) is new device that adds to battery's burden. It drops high beam automatically upon meeting another car.



of life must have been thinking of the modern car's lighting system. Complexity surely is its name. Courtesy and instrument panel bulbs have the trade listing No. 55, while the high beam indicator and the no-charge light used on some cars are designated as No. 51. The light for the selector dial of the automatic transmission is No. 44. The dome light is No. 81 on some models, 82 or 88 on others. Number 1154 applies to the rear tail and stop lights. These are the double contact type, one element is for the taillight circuit while the other may alternate between the brake light and the directional lights.

Headlamps are No. 4030. If a spotlight has a sealed beam lamp it is ordered as 4535 or 4515. Prefocused bulbs are referred to as Nos. 1209 or 1323. Numbers are the same for different makes of lamps. Except for a few of the 1953 models, lamps are all for 6-8 volt systems. But candlepower varies widely. Those single contact miniature bulbs have a single candlepower for the No. 51 size; one and a half for the No. 55.

Dome lights may be 15 candlepower while one of the auxiliary double element bulbs for the front of the car has three candlepower for the parking light circuit and 21 for the directional lights. With such an array in the light brigade it's a pretty good tip to keep the generator-battery system in top form. The fellow who took the fuse out of the electric clock to save the battery during World War II knows better than most motorists how much current is drawn by careless use of the stop lights and directional signals. They are heavy consumers.

Among the ways you waste current, and thus lower the efficiency of the whole lighting system, is holding your foot on the brake pedal when waiting in traffic. If this is done with your automatic transmission car to prevent creeping, better have engine idling speed reduced. A little lower rpm will usually check this annoyance and help the lighting system. Wasteful, too, is cranking the engine with the lights on. All any driver needs for night-time cranking is the key light. On some cars drivers often hit the heater or defroster switch with their knees and do not realize that they are wasting current that [*Continued on page* 142]

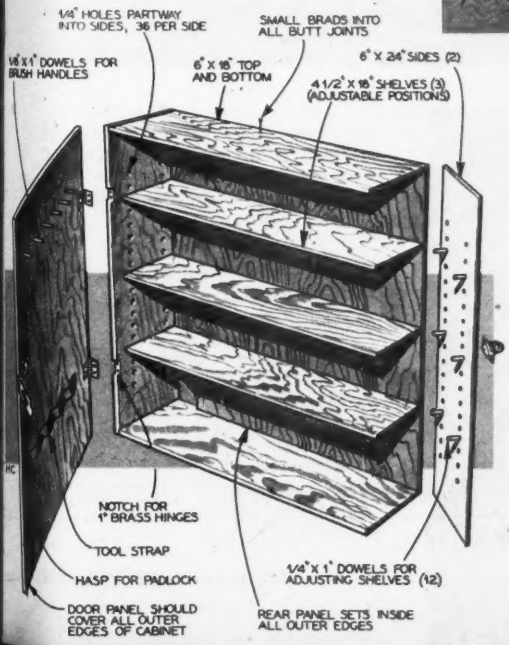
Paint Cabinet

Make this handy cupboard for painting supplies from scrap pieces of plywood and dowels.

By Shep Shepherd

Place dowel pegs in cabinet at desired heights and install shelving. Space between shelves can be changed at will.

Hang large brushes by handles on pegs at top of door. Small brushes, pens, and pencils are held by elastic strip.



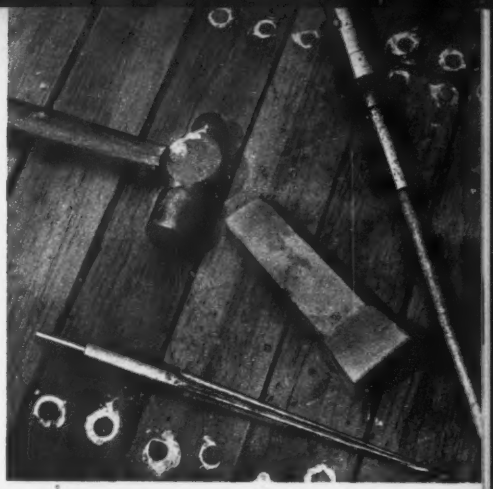
SPACIOUS enough to accommodate all the small paint cans, jars, bottles, brushes, and odds and ends that a craftsman collects, yet compact enough to hang on any available space on the workshop wall, this cabinet is made from scrap plywood. The plywood can be any thickness from ⅜ to ¾ in. The two side pieces measure 6x24 in., the top and bottom pieces are 6x18 in., and the three shelves are 4½x18 in. The back is 18 in. wide and 24 in. long less the thicknesses of the top and bottom pieces. The door is 24 in. long and 18 in. wide less the thicknesses of the side pieces. You'll also need lengths of ⅛-in. and ¼-in. doweling, two small hinges, and a hinge hasp. Assemble the cabinet with finishing nails, set the nails, fill the holes with putty, and finish with orange shellac thinned with alcohol. •

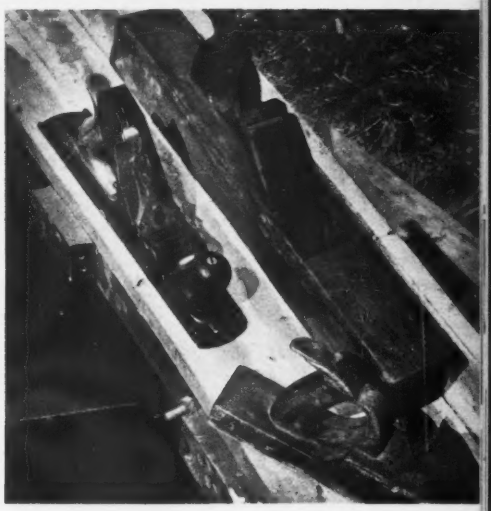
BACKYARD BOATBUILDER

Left: Walt Janiak holds half model of his boat. In foreground are shown all tools used except power saw to which circular blade in left center belongs.

Using only simple, readily available tools, this home craftsman constructed his own 30-foot cabin cruiser.

By Walter Steinhard





Above: Walt's biggest contributor of additional manpower was his brother, John. Below: Massive oak mallets, which were used mostly for calking seams, were specially made by Walt for the job.

Above: Additional custom-made tools were, from top to bottom, drill extension, mortise cutter, and reamer. Below: Huge wooden fore plane is over 100 years old and still doing a fine job.

WALT Janiak, who lives in South Dartmouth, Mass., has recently completed a project that should serve as an inspiration to all faint-hearted would-be amateur boatbuilders. Walt didn't build just another 12 or 14-ft. skiff such as most of us yearn after—he constructed a 30-ft. ocean-going power cruiser! And he did it in his own backyard with neither professional help nor any unusual tools or equipment. The fact that his backyard is two miles from the nearest harbor didn't faze him for a minute—after the boat was finished, he simply had her winched onto a huge trailer and trucked her down to the water.

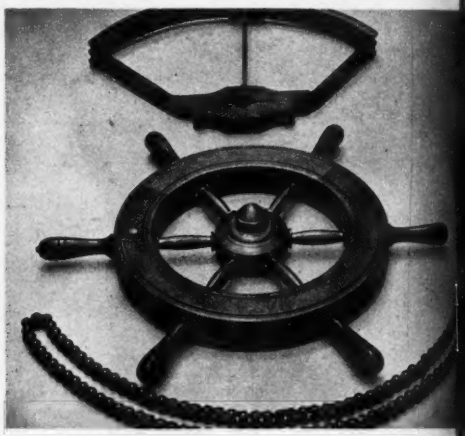
The boat, which is named Mibet, is a slightly modified Jonesport, Me., lobsterman. Her beam is 8 ft. and her draft is 28 in. She weighs about 4,500 lbs.

Her 60-hp Kermath diesel engine is a rebuilt job. It drives an

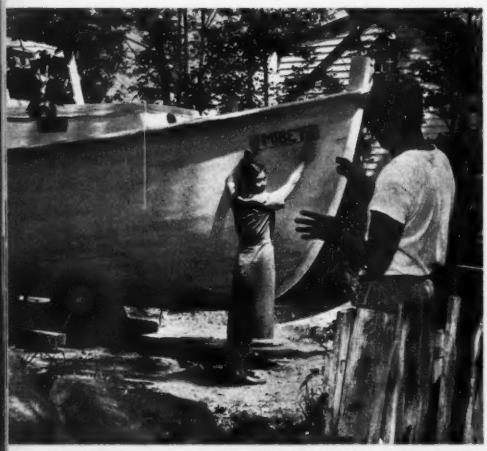
Mrs. Janiak provided moral support and cooling drinks. She admits that she never expected the vessel to be finished in one year's spare time.

Natural-crook white oak was used for the stern knee. On either side of it, fuel tanks for the diesel engine were securely fastened in place.

Mibet's superstructure was fabricated from 1-in. mahogany. Shatterproof plate glass was used for the windshield and Lucite for the side windows.



Walt Janiak constructed both the rudder quadrant and the handsome steering wheel. The latter is made of brass, bronze, and fine mahogany wood.



When boat neared completion, Mrs. Janiak tried hastily lettered name plate on the bow for size. This was later replaced by registration number.

Exhaust gases escape through the stack at left in above photo. This stack is waterjacketed to protect the passengers from burning themselves.

Towering tall in the backyard, Mibet had her sides sanded down for her first coat of paint about one month before she was ready to launch.

In front of his 150-year-old Cape Cod cottage, Walt demonstrates Mibet's radio direction finder for edification of his wife and daughter, Betsy.

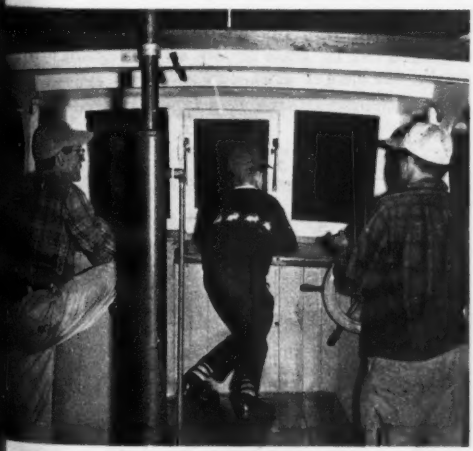
18x16-in. propeller through a 2:1 reduction gear. With this power, Mibet cruises at 14 knots, at which speed the engine burns two gallons of fuel oil per hour. Two 25-gal. fuel tanks under the cockpit thus permit the boat to be operated for 25 hours without refueling. This means that trips up to 400 miles long can be undertaken.

Since Walt likes to fish in the open North Atlantic off Cape Cod, this long cruising range is important. Equally important from a security standpoint in the foggy stretches of the North Atlantic are the radio direction finder and radio-telephone with which Mibet is equipped.

Accommodations are adequate but not fancy. Under the trunk cabin are bunks for two, a complete galley, and a toilet. The cockpit aft of the cabin is 12 ft. long. It has a windshield and a standing top at its forward end to protect the helmsman from the elements. The entire after end is open and free of obstructions, making it an ideal place from which to fish.

Construction throughout is rugged. The hull is planked with 1-in. cedar. White oak was used for the 3½-in. keel, the stem, the 2x2½-in. frames, and the natural-crook stern and quarter knees. Both the white-pine decking and the mahogany superstructure are 1 in. thick.

Walt received a great deal of help from his brother, John, on the project. Before they had completed the job, they had put in over 1,000 man-hours, which is the equivalent of three months of full-time work by two men. The cost of the materials used, with the exception of the engine, was in the neighborhood of $1,000. If built professionally, the boat would have cost over $5,000. •



There are no fancy frills in the pilothouse—instead, there's just a simple canopy overhead with side wings to keep out the wind and rain.

Driven by a 60-hp Kermath diesel engine through a 2:1 reduction gear, Mibet cruises at 14 knots and consumes two gallons of fuel oil per hour.

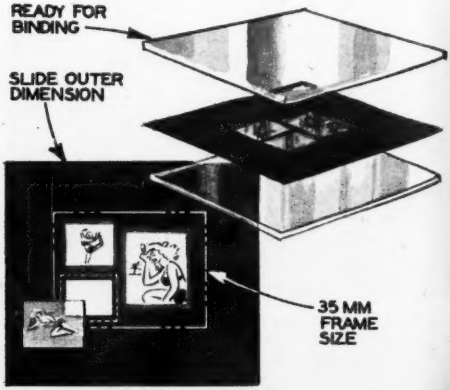
PHOTO TIPS

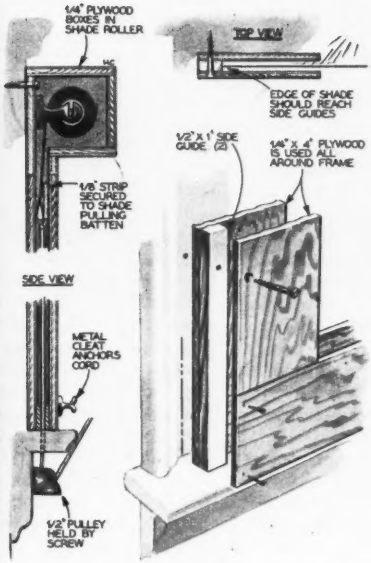
Film drying can be speeded up by using a windshield wiper blade as a squeegee to remove excess water. Place the negative on a sheet of clean glass and do each side separately, as shown in photo above.

You can make a darkroom out of any room in the house by making the framework shown in the drawing on the next page and in the photo above. When the shade is drawn all the way down, its

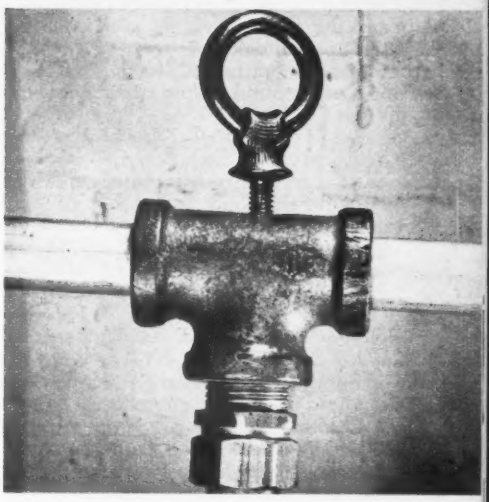
A thermometer holder for checking temperature of solutions in gallon jugs can be conveniently made out of a spring clamp. Thermometer should extend far enough into the bottle so that the lower third of the thermometer is immersed.

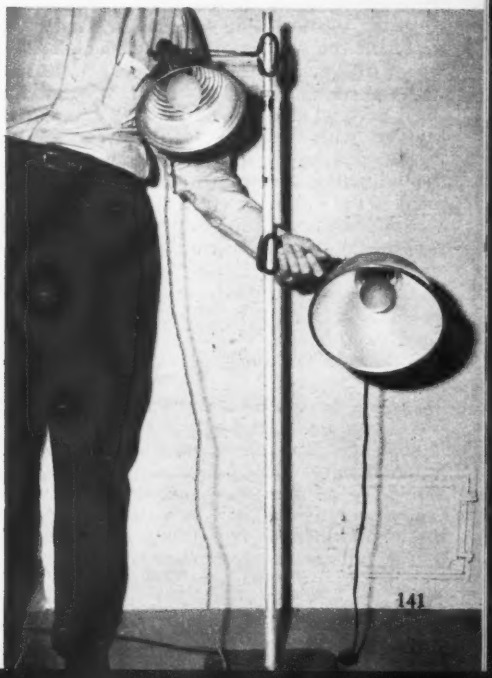
Poorly composed 35mm transparencies can often be salvaged by cutting out important areas and mounting two or three such bits of film on a single slide. Use standard 2x2 in. glass covers and "bantam" masks for larger area. Mask clear area.





lower edge rests in the channel formed by the plywood front. The shade should be made out of a heavy, black opaque material. Use a locking type of pulley to secure the shade in the "down" position.





An adjustable light stand, that will reach the ceiling, can be made of electrical conduit piping. A standard floor flange secures the end of the pipe to the ¾ in. plywood base (bottom picture). The center photo shows how a tee is used to permit lateral adjustment. The tee is reamed out so that the pipe slides freely in either direction. It is locked in place with a ¼x20 wing bolt (top photo). Vertical adjustment is achieved by using ½ in. pipe sliding within a ¾ in. section. The pipe is locked in position by tightening the lower nut against the upper nut (as shown at the bottom of the center photo).

[*Continued from page* 134]

might better be used for the lights. Switch to the parking lights when waiting in traffic if you suspect your battery is below par.

Lighting is also affected by the wiring, especially connections. And never underestimate the importance of the ground connection. Every two years the parking lights of one owner's car kick up a fuss. One or the other will suddenly go out. He now knows from experience that he has merely to tighten the lamp in its socket. Rust between the base plate and the fender is as effective in cutting the circuit as a break in the wiring. Any car light that is somewhat exposed is likely to develop a bad ground. Often rusting develops in the foot dimmer switch because it is mounted under the floodboards where it may catch road splash.

So much has been written on the subject of headlight adjusting that far too many owners think that, like safety suggestions, this sort of thing is for the "other fellow." A friend of mine has quite a different view of it now that he knows how badly the headlights were off the beam because of a comparatively minor collision which bent one of the front fenders.

Many headlights shoot high because of weak rear springs, overloading or failure to have sufficient fluid in the shock absorbers. A check for focusing isn't difficult. Drive to within 25 feet of a light colored wall with the car on level ground. Four lines should be marked on the wall. One horizontal line should be three inches below the headlight centers, next a center vertical line is lined up with the center of the windshield or the hood. To the left of this, draw another vertical line in line with the center of the left headlight, while the third vertical line on the right of the screen lines up with the right headlight center.

Now remove the headlight rims to expose the adjusting screws which provide movement of the lights for vertical as well as horizontal positions. Adjust one lamp at a time, covering the other. Using the *high* beam, and starting with the left light, center the hot spot on the crossing of the horizontal line and the left-hand vertical line. Then aim the right-hand lamp and do the same except that you will now center the hot spot on the vertical line on the right.

You do not need to make any adjustment for the lower beam because proper focusing of the high beam takes care of the situation automatically. If local laws require a loading allowance, another line must be drawn below the horizontal line, and by whatever amount the law stipulates. It is this line then which you would use for up and down centering of the hot spots. Where no loading allowance is required it is important that the rear and front of the car are level. Make sure tire pressures are equal.

Some of the older cars have odd patterns in dimming with only one lamp beam dropping or cocking to the side of the road. That is why such cars require two relays instead of the usual one. Relays save line losses because they permit the car's lighting circuit to pass through a more direct line from the battery to the lights. Relays installed in an old car will improve lighting because they eliminate losses through corroded connections and the light switch. But, relays can develop corroded contacts and may need to be replaced. They are not quite as exposed as fuses and junction blocks, but still are vulnerable. If the lights are growing dim, there's a reason.

If the lights are dim with the engine idling or switched off, the first step is to suspect the battery for weak, loose or defective cables or corroded terminals. Then check the wiring and switches. But if lights are dim with the engine at a fast idle, and the battery is known to be charged, poor lighting may be due to the low output of the generator. Also check for voltage drop in the wiring and the switches. You'll need a voltmeter to test for the latter. Where one light fails or is dim, the chances are that there's corrosion at the socket terminals. Loose connections at the terminals should also be suspected. And of course the bulb itself may be defective. Here again check connections and wiring in the lighting circuit.

Circuit breakers on today's cars are made of a bi-metal blade and a set of contact points in series with the lighting circuit. In case of an overload the blade heats up, thus separating the points. Under a heavy load of, let us say, 60 amperes the points will open for several seconds and then close. They are usually found in the main lighting circuit but on some cars are used to protect the ignition switch, heater motors and stoplights. For the lighting circuit the breaker is rated 30 amperes, while a 20 ampere breaker is sufficient for the others.

Most of the other electrical devices and lights are protected with fuses. Also a fuse may be used for the main lighting circuit and, if so, is rated 30 amperes. Fuses are not always easy to locate. It's a good idea to spend an hour checking locations and making notes for future reference. Remember fast driving will *not* charge your battery, for as speed increases, greater output drops. Most generators are adjusted to give maximum charging rate at about 25 mph. •

1st Prize..Free Wheeling $10.00 goes to Charles Blahausch of Harrisburg, Pa. Taken with a 4x5 camera at 1/1000th.

MONTHLY

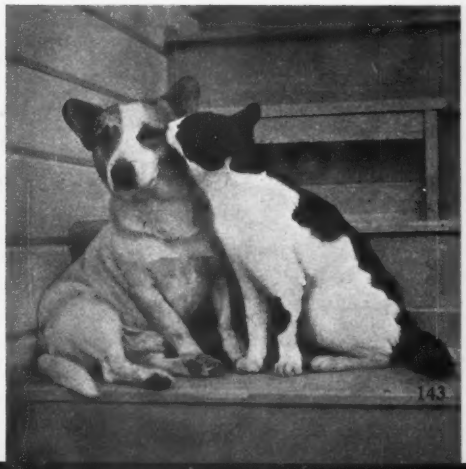
PHOTO CONTEST

Please put your name, address and picture-taking data on back of each print. Wrap with cardboard stiffeners and enclose a self-addressed stamped envelope or postage for return of unused photos. Prize-winning pictures are not returned. Judges are MI Editors. Duplicate prizes awarded in case of tie. Please address your entries to: Photo Contest, *Mechanix Illustrated*, 67 W. 44th St., N.Y.C. 36

$5.00 Award .....Over The River Captured by Karl F. Kunkel of N.Y.C. with a Rollei; 1/100th at f-22, Super XX.

$5.00 Award .....No One To Play With By Ron Larsen of Chicago. Taken with Kodak Vigilant at 1/25th at f-8; Super XX roll film.

$5.00 Award .....“Doggone Cat!” A bit of domestic bliss snared by Mrs. Helen Nestler of Strathmore, Cal.; taken at 1/100th, f-5.6.



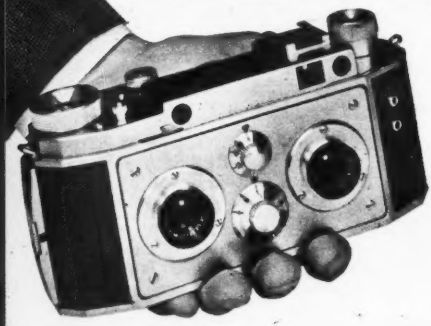
STEREO CAMERAS

"Amazing realism," is your comment when you first look at a three-dimensional photo.

By Herbert C. McKay, FRPS

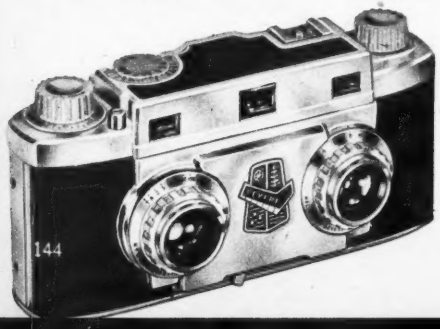
Stereo-Realist features range finder, built-in flash and shutter speeds to 1/150th; $159.

Busch Verascope uses two matched 40mm lenses. Shutter speeds range from 1 second to 1/250th. Price is $269.50.



Stereo-Tach converts single lens cameras for stereo work. Sells for $12.75 including mount.

Newest stereo entry is the Revere. Camera can be set to take single frames; sells for $174.50.



Videon has self-cocking, flash-synchronized shutter, speeds up to 1/100th; cost is $97.48.

THREE-DIMENSIONAL or "stereo" photography is the most perfect form of photography ever developed—two separate pictures which are slightly displaced combine to form an image which is so startlingly lifelike that it must be seen, to be appreciated. It can never be described! You can easily see this difference by a simple experiment. Look at some object such as a clock or small picture upon the wall. Raise one finger and hold it upright about a foot and a half from your eyes. Look at the clock and you will see two fingers, one at each side of the clock. Close your right eye; the left finger disappears. Now look with both eyes at your finger. You will see two clocks, one at each side of the finger, but when you close your right eye it is the right clock which disappears. The diagram shows how each eye sees a slightly different field.

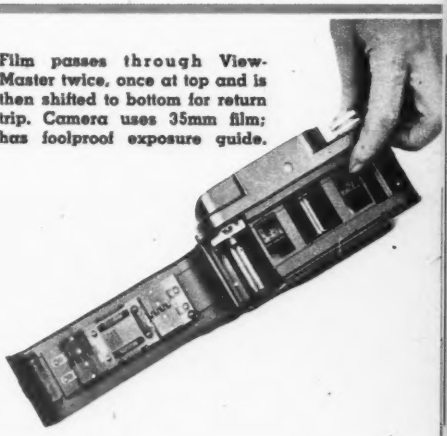
When the two stereo pictures which duplicate these different fields are finished, they are mounted side by side and viewed by looking through a pair of magnifying lenses, so that each eye sees only its own picture.

You do not really look *at* a stereo picture, you look *through* the two pictures and on out into space. This can be demonstrated by a simple experiment. Punch four ¼ in. holes in a piece of cardboard which is about six in. square. One pair is spaced about an inch apart, the other pair about two inches (see drawing). Then look at something. An object seen through the widely spaced holes is always much farther away than an object seen through the other pair of holes.

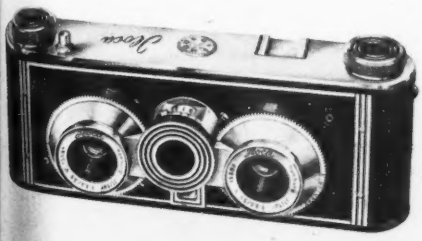
The use of two slightly different pictures is the whole secret of stereo. Today there are many stereo cameras on the market for taking 3-D (three dimensional) pictures. Most photo stores carry stereo viewers and it is advisable to buy one, but if you are careful you can make one with a pair of simple magnifying lenses. These lenses should have a focal length the same or slightly greater than that of the camera lens. These two lenses are mounted in a

View-Master takes up to 68 stereo views which are mounted on special disks. Camera is $149.

Film passes through View-Master twice, once at top and is then shifted to bottom for return trip. Camera uses 35mm film; has foolproof exposure guide.



Iloca takes 30 stereo pairs, has built-in self-timer and is synchronized for flash work. Sells for $125.



Stereo viewer made by Busch, has index marks to pre-set focusing and eye spacing positions.

Viewing light in Burke & James viewer goes on automatically when stereo slide is inserted; $12.95.

Polarized spectacles are used by audience to get three-dimensional effect when slides are thrown on the screen by projector shown at left; $175.

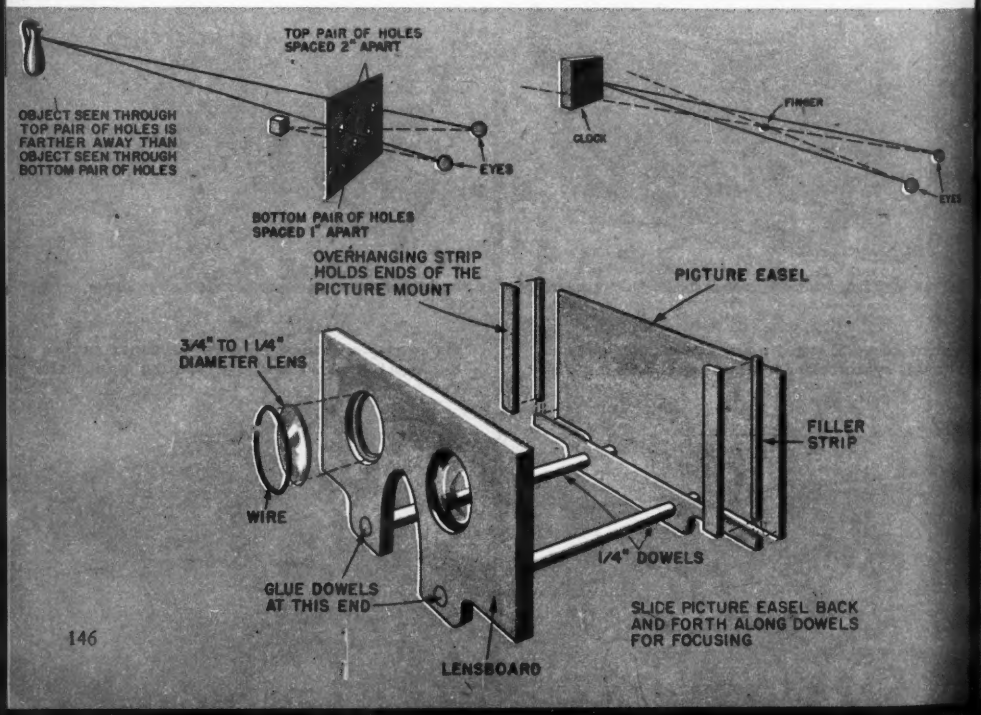
lens board with their centers separated by 2¼ inches. See drawing for constructional details.

When you look at the picture it is possible that it will seem to be flat or maybe the depth is reversed with distant objects appearing nearest to the eyes. This is because the pictures are backward. Remount them changing sides, right and left, and they will show true depth.

In mounting it is essential that the pictures be absolutely parallel both vertically and horizontally, and that neither be higher than the other. If these points are not observed, picture will strain your eyes. It might be said that with a good stereoscope and properly mounted pictures, stereo is beneficial to vision rather than harmful.

There are several stereo cameras on the market at the present time in a wide price range. Most of these use standard 35mm film which yield a picture about an inch square.

The Keyes Coronet is a low priced stereo camera (not illustrated) comparable to a



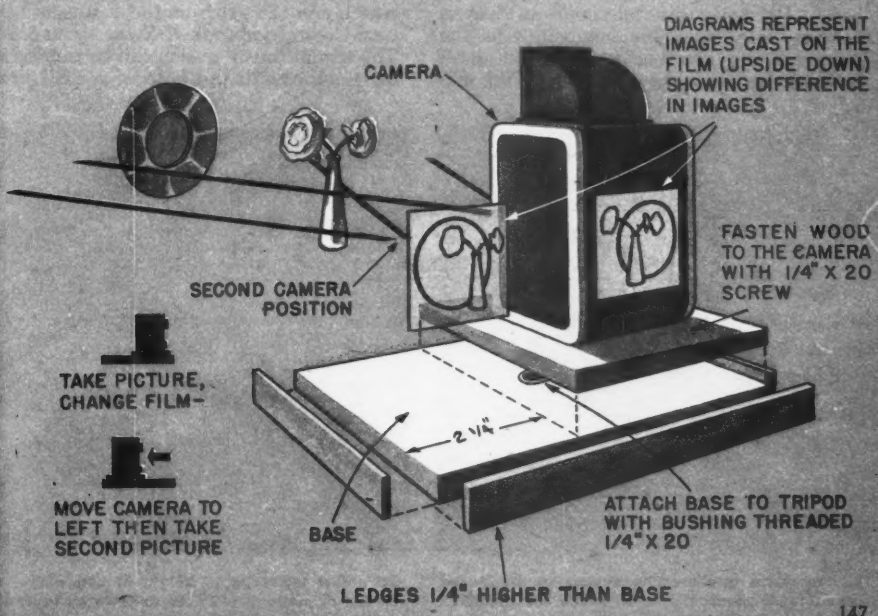
Mate to projector on opposite page is TDC viewer. Front and rear knobs are for focusing and spacing.

box camera. Its cost is low and the camera takes pictures of fair quality. Naturally the picture quality does not compare with that from cameras which cost several times as much. However it is a good beginner's camera.

The Viewmaster Personal is the smallest stereo camera now in use. The pictures measure just under a half inch square. They are mounted in reels like the familiar Viewmaster pictures sold in every town in the country. The f-3.5 lenses of one inch focal length are of fixed focus. The speed and aperture controls are combined in an ingenious exposure calculator which greatly simplifies operation by the beginner. The shutter has internal synchronization for flash and the flash gun is equipped with a range finder exposure meter which calculates the correct flash exposure.

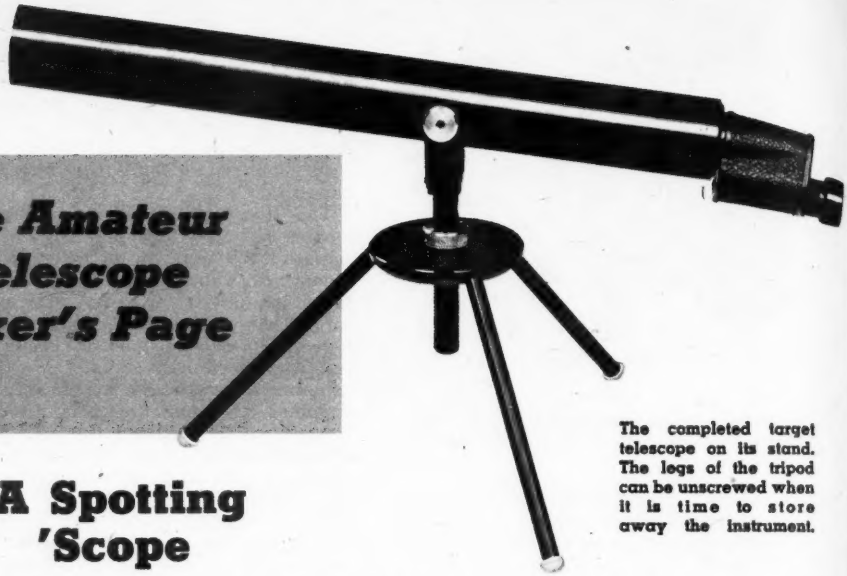
The Iloca is a German camera. The lenses are f-3.5's, focal length 35mm. This camera has a high shutter speed of 1/300th second. The shutter is the Prontor, familiar to photographers for years. The controls for speed, aperture and focus are set close together, between the lenses, easily visible from the operating position. As with most cameras, internal flash synchronization is supplied. Because there is no coupled rangefinder for focusing, the Iloca sells for a relatively low sum. The pictures are standard as is the picture sequence on the film. Quality is very good.

The Realist is the oldest of the domestic stereo cameras, and the one which really gave impetus to stereo in this country. The lenses are f-3.5's focal length 35mm and focused by a coupled range finder, with the finder lens set between the taking lenses. The Realist has an independently set shutter which permits special effect work to be done. A synchronized flash attachment is available. Realist picture quality is very good. The camera is easily operated and has [*Continued on page* 154]



Set-up showing how stereo pictures can be taken with a single lens camera. After first exposure, camera is moved to left for second shot.

The Amateur Telescope Maker's Page



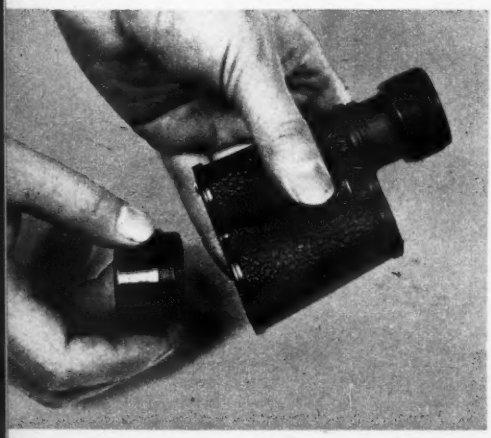
The completed target telescope on its stand. The legs of the tripod can be unscrewed when it is time to store away the instrument.

A Spotting 'Scope

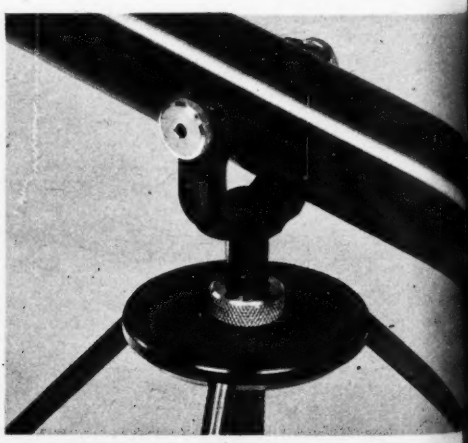
DO you like to plink away at a target and see how good a marksman you are? Fine. But that hike back and forth to see how *really* good you are tends to break up the shooting rhythm and the comfort of a suitably ensconced shooting position. The answer of course is a spotting 'scope, but, a good one costs dough. Pretty near $100.

You can build a very fine instrument for this kind of work for a fraction of this cost. Because this telescope utilizes a commercially available monocular as the eyepiece and erecting system, you don't have to be a master optician to do this job. A monocular is not only cheaper than binoculars (after all it is only half of a binocular), but through some quirk in the tax laws is not subject to the usual 20% Federal tax levied on a complete binocular.

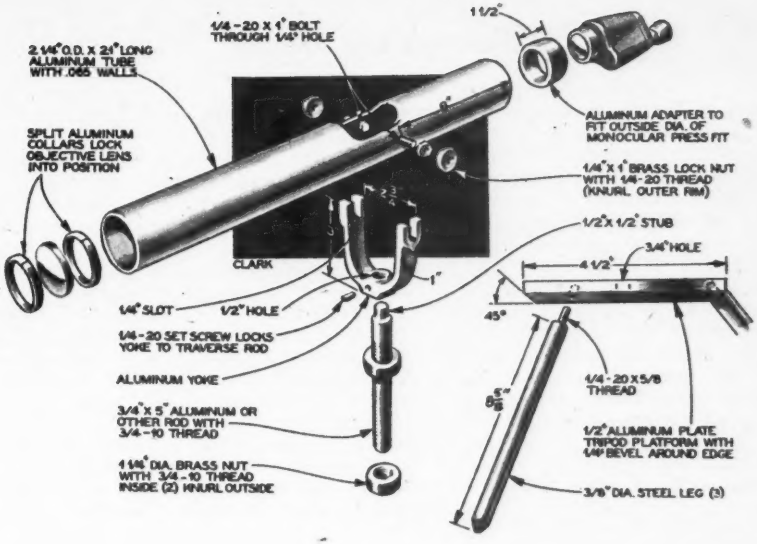
The monocular used for this spotting 'scope is available for less than $10 from the DuMaurier Co. in Elmira, N. Y. The only other piece of optical equipment you will need is a war surplus objective lens of 24½ in. focal length, 2⅛ in. in diameter, which you can get from the A. Jaegers Optical Co. in Lynbrook, N. Y. for about $12.50. The rest of the operation can be carried out on a lathe with the help of a drill press.



The eyepiece and erecting system of the 'scope consist of a monocular from which the objective (the large lens in the front) has been removed.



To adjust telescope to height of user's eye, nut on top of platform is raised or lowered to desired position, then mating nut on bottom is used as lock.

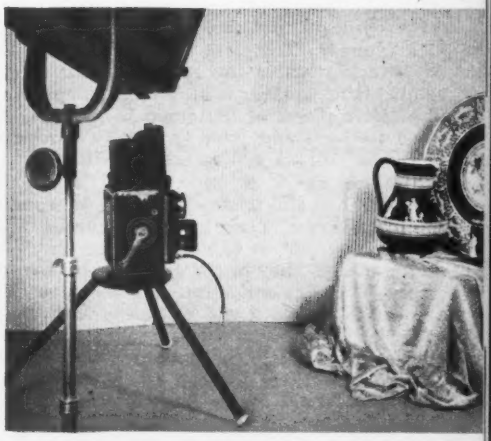


The long tube holding the objective is made of aluminum, 2¼ in. o.d., 22 in. long. The eyepiece end carries an adapter into which the objective end of the monocular fits. It is held in place by a ¼x20 set screw.

When you have proceeded so far, determine the balancing point and drill a ¼ in. hole through the tube at each side. Through each hole, from the inside, pass a ¼x1 in. bolt. A nut on the outside holds it in place. These two bolts projecting from each side of the body of the tube, form the pivoting point for the telescope when it is placed in the yoke. This yoke can be cut out of aluminum, or if you are really ambitious, out of bronze or brass. The center part of the yoke consists of a ¾x5 in. threaded aluminum rod. When the stem of the yoke is passed through the hole in the tripod, the two knurled nuts then form the elevating system. The upper nut is moved up or down so that the eyepiece is at the user's eye height and then the lower nut is screwed up so that it locks the telescope in place.

The tripod is a relatively simple affair with an aluminum platform and ⅜ in. steel legs. The end of each leg is machined to form a ¼x20 thread which engages a suitably tapped hole [*Continued on page* 190]

The telescope, with a power of 40x, will spot a .22 in the black at a distance of 100 yards. Maker Paul Palanek tries out new Marlin rifle.



The tripod makes a very fine stand for table top work. Use a ¼x20 wing bolt and a bushing to hold the camera. Note rubber feet on the legs.

Secretary Desk

[*Continued from page* 118]

section is a ½-in. plywood panel which ties together the entire upper part of the desk by means of screws and glue. Then the upper main panel is fastened to the lower panel, from the bottom, with screws. This makes every successive operation conveniently accessible and at the same time hides all butt ends.

All joints are glued, in addition to having either screw, dowel or spline support. The miter joints are 45° spline joints, with the exception of the left side joints. They are, as indicated in the drawing, 42.5° spline miter joints. This is necessary to make possible the 5° side taper. The bottom joints are ¾x⅝-in. rabbets secured from the bottom with wood screws. This conceals the bottom board ends.

The left side rabbets are 85° instead of 90°, to provide for the 5° side taper of the desk. It is recommended that when driving the wood screws, you first pilot and body-drill the holes to prevent splitting the wood.

The typewriter stand consists of a ¾-in. piece of plywood 16⅝x15$\frac{1}{16}$ in. wide. A ¼x1⅝ in. strip is fastened on each side to hide the board edges and provide ¾-in. runners for clearing the bracket holders when the drawer is moved into and out of its compartment. Dowel pins are used to secure the plywood panel to the drawer head.

A ½-in. extrusion is bolted across the front edge, next to the brackets, to eliminate warping which would misalign the brackets with their holders. These same ⅛-in. bolts support the main suspension points of the drawer brackets, as noted on the drawing. In addition there are two wood screws for each bracket, put in from the bottom.

The brackets are made out of ½-in. round stock, cut and brazed. A slot is cut in the center bracket to receive the bracket holder lock plunger. The long taper at the end of the bracket starts the plunger's retraction against the spring load which keeps the plunger in place, or bottomed in the slot, to prevent the stand from gradually working out while you are typing (see drawing).

You can use 1 in. wide, ¼-in. flat stock, drilled at one end to receive the ½-in. round vertical pieces. These vertical pieces are 1¾ in. long, cut at 45° on one end and 90° on the other. They're cut out of ½-in. round stock. The 90° end enters the hole at the end of the flat stock and is then brazed. It is advisable to finish the entire round stock piece before brazing it to the flat stock. Note that the front holes in the flat stock pieces are spot faced ¾x⅛-in. deep to countersink the supporting nuts. The other holes (see drawing) are countersunk for the flathead wood screws. The flat stock is recessed flush with the bottom of the stand drawer. This is done to give clearance for the holders when the drawer is passed back and forth.

Steel tubing of ⅝-in. diameter, cut 4½-in. long, can be used for the holders. It has the proper inside diameter for the bracket round stock clearance. The tubing is brazed to a 1x5x$\frac{1}{16}$-in. piece of flat stock. Three holes are drilled in the flat stock to fasten the holders to the drawer compartment, as well as to align the holders with the drawer stand brackets. This alignment should be reasonably true to give free movement to the typing drawer.

A piece of thin metal can be cut and filed to shape for the lock on the center holder. This lever is installed to actuate the plunger, manually, when one is ready to withdraw the drawer stand from its brackets. As mentioned before, this locking device safeties the stand while typing.

All of the drawer pulls are fastened with screws from the inside after glueing. The drawer heads are made from ¾-in. plywood, cut to size and shape, with a blind dado for inserting the drawer sides and bottom stock. Otherwise, the drawers are constructed in keeping with the standard groove and dado method. Veneer the drawer butt ends to match the grain of the desk at the point of contact. The pulls are made from a piece of solid ¾-in. stock cut at 45° and are 1½ to ¾-in. wide (see drawing). Attach the handles with the diagonal side next to the drawer head.

You will notice there is a 1½ in. extrusion across the top, on the inside at the center, which is formed to fit the left hand bottom drawer compartment. This prevents warping of the wide top panel area and makes it rigid enough to support the stress caused by pounding the typewriter keys.

To keep modern in design, the back is slanted 7° and all side and top panels are cut with a ⅜x¼-in. rabbet to receive the back of the desk. The entire back is made of ¼-in. stock.

In the center at the bottom of the back, a square frame of modern design is securely fixed. Without this, the desk would tend to distort when being moved.

With the help of the pictures and drawings, you should have no trouble building this secretary desk. When you assemble the drawers, be sure the drawer sides are fastened exactly 90° to the vertical position of the drawer front or head piece. This will assure a perfect fitting drawer. •

MI Lie Detector

[*Continued from page* 112]

completed. The switches are supplied with two nuts. The hex nut at the back is tightened to the panel after the knurled nut is set flush with the front of the switch.

The standard potentiometer comes with a long shaft. Do not clamp the body in the vise to cut it short, but clamp the shaft and hacksaw it to the proper ½-in. length.

Use lock washers under all nuts. The jacks have insulating washers. The left one, JI, is mounted with the insulator under the nut. The right one, J2, can be mounted without the insulator so as to be grounded. The colors of the jacks are immaterial, red and black being used for appearance.

Wire the unit carefully. Use solid wire and the resistor leads for the connections between the components on the panel. Stranded wire is used between the terminal strip and the battery plug. The strip is used to prevent the battery wires from breaking loose whenever batteries need to be replaced.

The 1½-volt cell needs to be replaced when it will no longer operate the pilot light. The 45 volt battery is replaced when it will no longer move the needle to the end of the scale with the Adjust Meter knob full ON.

Soldering should be done carefully, using rosin-core solder. Never use acid-core solder for electrical work as it will corrode joints.

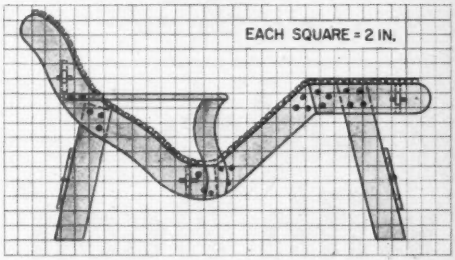
The Multi-ranger can be used as a multitester for radio use. The Marion Company will furnish a schematic diagram, and parts can be purchased to finish the tester for use in regular set and line servicing. •

PARTS LIST

Cost	Quantity	Item
$ 6.86	1	Cabinet, sloping front 8x8x14", ICA
10.78	1	Meter, Marion Multiranger 55, 4" Sq., 400 Micro-Amps., or No. 29 Simpson, 500 Micro-Amps
.73	1	Potentiometer, 50,000 Ohms, Mallory U35
.09	1	Knob Pointer, Red, setscrew type
.32	1	Pilot Light Assembly, open type, red jewel, 11/16" hole
.16	1	Pilot Light, 2V Min., Bayonet Base, No. 49
.96	3	Switches, Cutler Hammer SPST Bathandle
.45	1	Switch, Cutler Hammer DPST Bathandle
.12	1	Jack, insulated, Banana Red, ¼" hole
.12	1	Jack, Black, ¼" hole
.13	1	Plug, insulated, Banana Red
.13	1	Plug, insulated, Black
.10	1	Resistor, ½ Watt, 68,000 Ohms
.20	2	Resistors, ½ Watt, 10,000 Ohms
.39	8	ft. limp wire, No. 18, stranded, red
.13	1	Terminal Strip, 4-lug
.09	1	Plug (for 45 V Battery)
1.74	1	Battery, 45 V, Burgess M30, Plug Type
.58	1	Battery, 1.5 V, Burgess 4FH, Screw Terminal
.75	1	Handle, Chromium (4 13/16 MTG)
$25.03		Total Cost, exclusive of miscellaneous nuts, screws, wood, etc.

All parts are available at any radio supply house. Cost may be reduced by making the cabinet of Masonite or plywood, and by using a smaller size meter.

Contour Lawn Chair



[*Continued from page* 101]

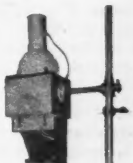
pieces are joined with glued lap joints. The third method also involves making the frames in three pieces, but with butt joints that are spliced with bolted blocks. This was the method used to make the chair shown in the accompanying photographs. Pattern for size and layout is shown in drawing above.

The first method is the quickest and simplest and is recommended, provided sufficient work space is available. The second method is better suited when working in limited space, since three separate pieces are handier to work with than one large member, especially when cutting the mortises for the tenons of the struts that connect to the two main members.

The third method also features ease of handling stock in limited space and provides stronger construction as well. Note how the blocks are bolted in place to connect the three parts of each main frame. The legs and vertical members of the arms are also bolted for strength.

The user of the chair rests on strips of wood measuring 22x7/8x5/8-in. These strips are held in place by screws which are countersunk, the depressions being filled with crack filler. Finish to suit.—*Bertram Brownold* •

the MI pipe fittings enlarger

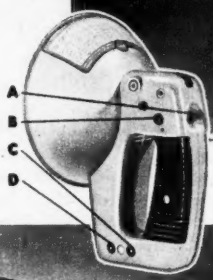


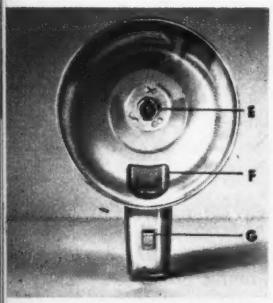
Enlarge up to 4x5 in. negatives with this sturdily constructed piece of darkroom equipment that you can make from standard plumbing supplies and a camera. For complete plans and data, remit 50 cents to MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Conn. Specify Plan No. P-8.

Catch it with "flash"

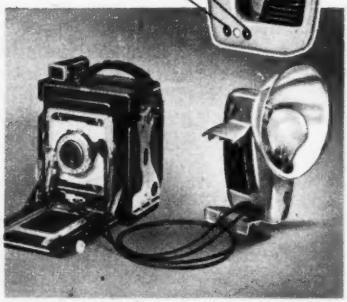
Some of your best snapshot opportunities happen indoors. *The new Kodak Ektalux Flasholder* "catches it" every time. Its 22½-volt battery-condenser power fires lamps dependably and uniformly—peaking time of lamps is more consistent. With Standard Bracket for use with most roll-film cameras, $29.75.

Right:
Accessory outlets on the "Ektalux"—Button **A** for Solenoid($15.40) permits tripping shutter from Flasholder. Outlet **B** accepts the Remote Release ($4.71). Outlets **C** and **D** take Extension Units ($12.40 each.)

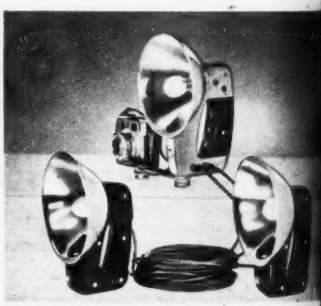




Lamp system is flexible—For midget lamps, note socket **E**; provides for two-way focus. **F** is socket for medium-base lamps, removed by ejector **G**. Exposure table on back of reflector.



Ideal for press cameras, too—The Ektalux Flasholder can be fitted to most press-type cameras. Flasholder and camera lock together firmly and detach quickly. Kodak Ektalux Flasholder with Press Bracket, $33.85.



Dependable multiple flash—Two Extension Units can be plugged into separate outlets on the Flasholder; another Unit can then be hooked to each. Socket in the base fits tripod or Kodak Flexiclamp.

Low price for new Kodak Standard Flasholder—$8.25. Here is dependable flash for most internally synchronized cameras. New rugged hand-grip battery case . . . new rubber cushion riveted to bracket . . . new heavy-duty lamp ejector spring . . . new, handy exposure table on back of reflector.

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Get into your own flash pictures—Attach Kodak Auto-Release to any camera equipped with cable release . . . set it . . . 10 seconds later shutter is tripped automatically. $3.86.

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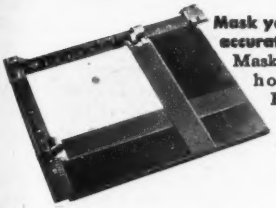

Mask your enlargements accurately—Kodak Masking Easel, 11 x 14, holds paper flat. Heavy base insures steadiness. $9.60.

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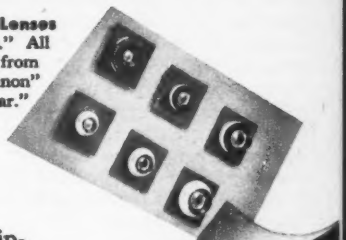

Your Kodak dealer will be glad to demonstrate this equipment for you. His professional advice is free for the asking. Why not make him headquarters for all your photo needs.

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Stereo Cameras

[*Continued from page* 147]

proven the most popular of all the stereo cameras in this country.

A de luxe stereo camera is the Busch Verascope, the last of a long line of stereo cameras which have been familiar for the past quarter century and more. It is made in France by Jules Richard. This camera makes a wider picture than the others. The sequence instead of the continuous interlace used in other cameras is 1-2-1-2; 3-4-3-4; 5-6-5-6 and so on. The film may be cut into short lengths without separating a pair. The camera may also be used for single exposures by closing off one aperture. Its lenses are f-3.5's, of 40mm focal length. Flash synchronization is built-in. Focusing is by coupled range finder. This is the most costly of all the cameras and the picture cost is highest because fewer pictures are made on a roll; but those who use it are highly enthusiastic.

The Videon camera uses two matched, coated f-3.5 lens with a self cocking shutter. Speeds range from 1/10th to 1/100th of a second. Inasmuch as it lacks a range finder it sells at the comparatively low price of $97.48. It uses standard 35mm film in the 20 or 36-exposure roll, yielding 16 stereo pairs from the smaller roll and 29 pairs from the larger.

If you have a good quality 35mm camera you can readily convert it into a stereo job by using the Stereo-Tach. This is an ingenious device consisting of a set of mirrors which splits the image into two halves. The unit can also be used on larger cameras for taking black and white stereo pictures.

Latest entry in the fast expanding stereo field is the Revere 33 camera. This camera uses two matched f-3.5 lenses with shutter speeds from ½ second to 1/200th. An interesting wrinkle is the use of built-in filter retaining rings which eliminate the use of special adapters.

Most stereo camera manufacturers make hand viewers. These viewers generally have a set of batteries and lamps for viewing the mounted stereo slides. The better type of viewers in addition to having provision for focusing the eyepiece have some sort of arrangement for varying the inter-pupillary distance of the eyes. Some have added refinements such as putting on the light automatically when the slide is inserted. Of course, the de luxe method of showing slides is by means of a double-barreled projector. The projector throws two seemingly scrambled images on the screen. The viewer, in order to see each image in its proper relationship must wear a pair of polarized spectacles. The effect is extremely lifelike. •

Etched Copper Tray

[*Continued from page* 131]

transfer the design to the metal. The best way to do this is to cover the copper with a paint made by mixing one part whiting (calcium carbonate), five parts water, five parts alcohol and a few drops of liquid soap. When dry, the design may be traced onto the surface with carbon paper. With a fine awl or darning needle, scratch the design into the metal. Scratch deep enough so that the design may be seen when the whiting is removed. Wash off the whiting and clean the surface to be etched with fine steel wool.

Paint that part of the design which is to be protected from the etching solution with asphaltum varnish, a solution sold especially for this purpose at hobby stores. If the varnish is hard to come by in your locality, buy some asphalt roofing compound. Use turpentine to thin it to heavy cream consistency. Allow the asphaltum to dry overnight, then examine for thin spots and touch up any places which might need it. When the asphaltum is dry, you are ready for etching.

Etching is the process of removing metal by chemical means in order to produce a raised design. The acid will eat away those parts of the design not protected by asphaltum. The etching solution is made by adding one part nitric acid to three parts water. Always pour the acid into the water, *never* water into acid, as steam is generated and causes spattering. Avoid inhaling the fumes.

Prepare the solution in a glass vessel, then pour into the copper pan using enough to completely cover the bottom. Agitate the solution to make it act faster. Inspect the progress of the etching frequently. The length of time required will depend on the strength of the solution and its temperature. If any part of the asphaltum is lifted by the acid, remove the piece from the solution and wash in water. If the design is not etched deeply enough it may be repainted and re-etched. After the etching is complete and the acid washed away, remove the asphaltum with turpentine. Polish again with steel wool.

Cut off the corners of the tray with a hack saw and use the pliers again to bend the turned-up edge square. After all work is completed, polish both the inside and outside surfaces of the tray. Copper will darken quickly if left unpolished. A coat of plastic finish will keep the surface bright.

Make the frame of hardwood. Birch was used in this case. Make rabbets as shown. Cut the four feet as indicated in the diagram, and fasten across the frame corners. These serve a double purpose. They raise the tray so no other handles are needed and they make the frame perfectly rigid. •

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Table Carronade

[*Continued from page* 123]

Wheels are best made by drilling eight holes 45° apart on a 7/8-in. circle. Trace the outline on blank stock 1¼ in. in diameter by ½ in. wide. Place in lathe and turn to shape. Elevating bolts are next made as pictured. A $\frac{3}{32}$-in. hole is drilled in the larger half. The smaller half is turned so as to be a drive fit. Elevating bearings are then made from $\frac{3}{16}$-in. flat stock. No. 18 escutcheon pins ¾ in. long are used to represent bolts. Since the wood would split if they were driven, it is best to use a drill a few thousandths of an inch smaller than a pilot hole. No. 56 in this case. This completes most of the metal work.

The trail block, axle, slide and quoin are all made of walnut. All edges on the trail are beveled $\frac{1}{16}$ in., with the exception of places where two pieces join. The axle is made from a piece of wood ½ in. x $\frac{11}{16}$ in. x $3\frac{1}{16}$ in. turned ½ in. in diameter on each end and then turned to fit brass axle bands which are pressed on and pinned. Small pins can be obtained from model dealers. Holes for linch pins are drilled through the center of the round section with the axle tilted 10° to the rear.

The slide block is rectangular except for the 5° taper toward the top rear. Most of the small pieces are self explanatory, with the exception of a recess on the quoin which is used for pulling it out. By laying an 1/8-in. pin punch diagonally over the spot where it is to be, and tapping lightly with a hammer, the recess is easily made.

All parts now completed, the model is ready to be painted and assembled. Metal parts are lacquered black and the wood is shellacked or varnished. Painting will be easier if done before assembling and touched up later. The axletree and slide are glued to the trail and the trunnion bearings are next mounted to the trail. The trunnion bolt is slipped through bearings and the barrel. Quoin is placed beneath barrel until proper elevation is secured. •

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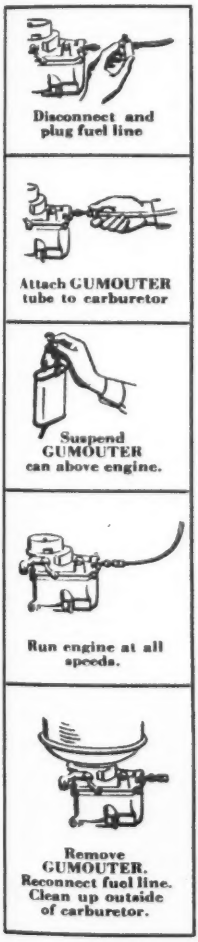
How To Clean Carburetors Right On The Engine



Here's the low-down on a new approach to an old problem: the why, when, and how of cleaning carburetors on the engine.

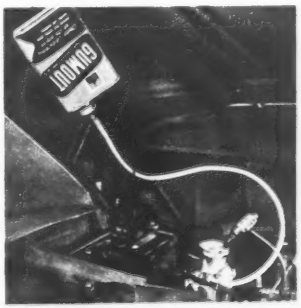
A common cause of hard to locate engine-trouble and high gas consumption is the tiny speck of dirt or the microscopic gummy film that cuts carburetor efficiency.

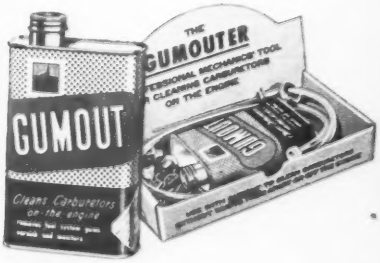
Many hours and dollars are wasted checking timing, adjusting spark plugs, replacing points—even making major replacements—in an effort to correct trouble curable only by carburetor cleaning.

Today, "clean the carburetor *first*" is considered the sensible approach to curing a rough-running engine. When should this be done? The man whose car is tuned to the sweet song of a perfectly running engine cleans the carburetor (1) at the first sign of engine trouble; (2) with every tune-up; (3) at least twice a year.

Complete carburetor cleaning no longer involves disassembly, soaking in solvent, re-assembly, and readjustment. On-the-engine carburetor cleaning does a complete job in less than 20 minutes; removes all dirt, muck, moisture, gum, and varnish. You merely disconnect the fuel line; use an inexpensive "applicator" to feed the cleaner into the carburetor; then reconnect the fuel line.

Pennsylvania Refining Company, 2684 Lisbon Road, Cleveland 4, Ohio sells the new carburetor cleaner under the name GUMOUT at $1.50 a pint. The applicator, which lasts indefinitely, sells for $4.75. The manufacturer has prepared a helpful *Carburetor Handbook*, which is sent free on request.





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Tree Banking Pays Off

[*Continued from page* 76]

loggers cut every tree and left mountains of waste wood and sawdust behind. Those refuse heaps were admirable breeding places for wood-devouring insects and the starting places of countless fires.

The old clear cutting—take all—policy, which denuded vast areas, is no longer practiced. Tree Farmers, with their know-how and today's broad utilization of wood, have changed the entire timber picture. They leave no scrap heaps—they have a cash value. They cut only prime trees and sell almost every portion: trunks, branches, tops, bark and even sawdust. These formerly worthless cuttings now go into more than 6,000 wood products, which include plastics, rayon, alcohol, chemicals and fiberwood.

Once, a farmer's woodlot was his forgotten acreage. If his trees returned a meager seven per cent of his total farm income, he was content. He derived his money from tilled acreage. Now, working under the expert supervision of Tree Farm foresters, many farmers are realizing up to 50 per cent of their annual income from trees.

Fred Antonelli, a Lewis County (Wash.) farmer purchased an 80-acre farm for $4,000 in 1945. Half the acreage was in timber which he planned to clear, believing that cleared land was worth considerably more than woods. Then, he gave tree farming a try.

Last November, Mr. Antonelli informed the service forester in his area that he had been offered $8,000 for his trees—twice what he'd paid for the entire farm! Needless to report, he is now an enthusiastic Tree Farmer.

During the Western Washington Reclamation Institute Tour last year, a woodlot exhibit was presented by Carl Lamb, another Lewis County Tree Farmer. Lamb prepared a 26-foot tree for discussion, felling it and making veneer logs, sawlogs and woodpulp. He converted a chunk of "useless" cedar into excellent fence posts.

He concluded his demonstration by showing the group an area where he had made $500 in two days on piling and estimated a gross return of $2,000 pulpwood salvage from 26 acres of trees.

Wood-dependent industries in Arkansas pioneered in the forest practice known as sustained yield—a fancy name for Tree Farming. That state also pointed the way for rural churches everywhere to pay off mortgages and make money with trees.

Ninety-nine-year-old County Line Missionary Baptist Church, near Nashville, Ark., for instance. In 1936, this little church (75

[*Continued on page* 160]

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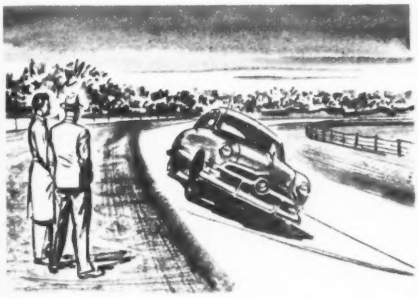

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Tree Banking Pays Off

[*Continued from page* 158]

members) came face to face with forestry. It needed funds and the deacons looked to their woodlot of 32 acres. M. M. McCrary, the present church clerk, recalls that one deacon advocated cutting all the timber. The majority, however, held out for selective cutting.

In 1949, the church had a big wood harvest after Elmer Parks, a forester, had spotted certain trees for sawlogs, others for pulpwood. He chose each tree for the most suitable product, keeping in mind the best method to assure future timber crops.

"Mr. Parks showed us how we can have timber sales every five years," McCrary explains. "If we had spotted all our trees 15 years ago, the church would be about $4,000 better off today."

Wood is basic to our national welfare, the same as oil and iron—both expendables. Pump or dig out the two latter resources and nothing is left. Only wood is replaceable.

The aim of the Tree Farm System is to bring all of America's timberland under its supervision. Several forested states have not joined the ranks but plan to do so. Many other states, never considered timber producers (such as Ohio, Indiana, Illinois), are launching big tree planting campaigns. Rural youth organizations are behind many of these plans. Their aim is not only an assured future lumber crop, but the creation of needful watersheds in barren areas, which means richer cropland and a reduction of floods.

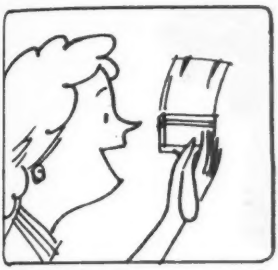
While much of the Tree Farm System's reforestation program calls for direct seeding or planting, both by hand and helicopter, Mother Nature is still the chief forester. In planned logging, certain stands of timber are left intact. From these seed trees, billions of tiny seeds are blown over a wide area and take root. It is only in areas where natural seeding doesn't occur that hand or mechanical planting is necessary. Expert foresters believe that nature will take care of most of our reseeding problems if man will keep fire controlled.

Want to become a Tree Farmer? Well, just notify your local forester or any agency handling tree-planting problems. In either case, a service forester will inspect your wood, mark all trees ready for cutting and even suggest their most profitable use. The service is free. You, in turn, agree to remove all diseased trees, provide insect and fire control and fence out cattle. Naturally, you must replant cutover areas. That's all.

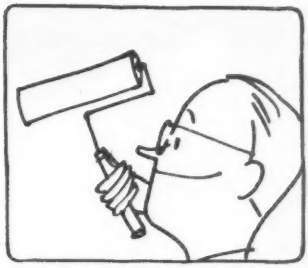
Tree Banking is the farmer's best guarantee of old-age security. It's also America's best guarantee against millions of acres of nakedness and desolation. •

PAINT YOUR WALLS THE EASY-GOING WAY

with new Gold Bond Velvet!

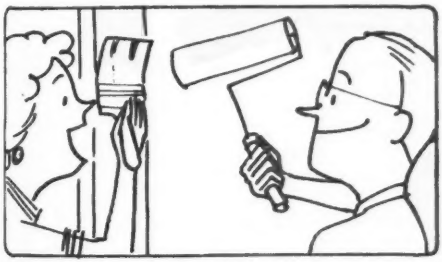


GOLD BOND VELVET is the easiest-going wall paint you ever used! Ready-to-use without the usual mixing or thinning. Dries in minutes to a velvet smooth surface that won't crack, chip or peel.

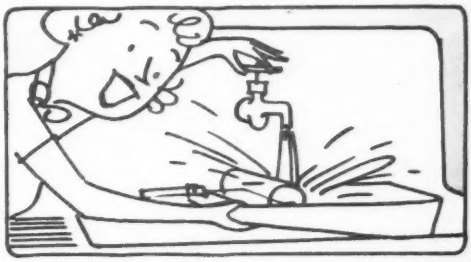


FLOWS ON! Just dip your roller or brush in Gold Bond Velvet and see how it goes on almost by itself! It eliminates what professional painters call "drag." No "painty" odor, either.

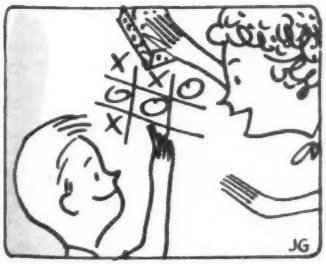
WITH ORDINARY PAINT you have to guard against lap or brush marks, touch-up spots. No worry with Gold Bond Velvet! This latex-base paint blends perfectly and gives a good job every time!



COVERS WALLS AND WOODWORK, TOO! Use Gold Bond Velvet over plaster, wallboards (including "taped" joints), primed wood or metal, concrete and previously painted surfaces.

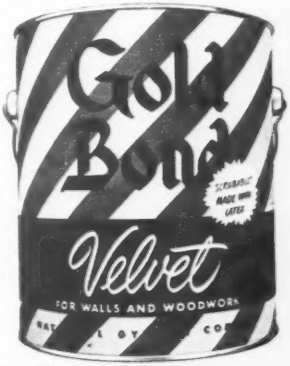


EASY TO CLEAN UP! Brush or roller cleans off with plain water. Spatter or splash marks clean up with a damp cloth. No turpentine needed.



SCRUBABLE! Velvet can be scrubbed repeatedly without harm. Pencil, crayon, finger marks and food smears wash right off!

Ask your paint dealer or lumber and building material dealer to show you the 16 new, intermixable, Velvet colors (plus two whites). The orange and tan Gold Bond label is your assurance of another top quality National Gypsum Company product.



West of the Rockies, ask for Wesco Paints, products of Wesco Waterpaints, Inc., a subsidiary of National Gypsum Company.

NATIONAL GYPSUM COMPANY • BUFFALO 2, NEW YORK

★ Unless you are asking for trouble—your radiator deserves a *thorough* spring cleaning! Get rid of winter's accumulated rust and dirt the easy, effective way—with these three Bowes radiator conditioners. Then you can enjoy care-free spring and summer motoring.

BOWES RADIATOR
KLEN-ZUR
Quickly removes rust and scale . . . contains no harmful acid . . . makes cooling system like new.

BOWES RADIATOR
RUST-ROUT
Protects the cooling system, prevents accumulation of more rust . . lubricates water pump, too.

BOWES RADIATOR
STOP-LEAK
Effectively seals any existing leaks and helps prevent new leaks.

DRIVE IN WHERE YOU SEE THIS EMBLEM

BOWES SEAL FAST

★ It takes so little time to condition your cooling system for spring and summer driving . . . yet it can be so costly and troublesome to neglect it. Don't delay—prepare NOW for spring and summer with Bowes Cooling System Chemicals.

BOWES "SEAL FAST" CORP., INDIANAPOLIS 7, INDIANA

The '53 Mercury

[*Continued from page* 93]

still hasn't put in an appearance. The old-time flat top still reigns.

To me the real crux of the Mercury story is the fact that I get more personal inquiries from acquaintances about whether they should buy a Merc than about any other car. Hardly a week goes by that someone doesn't phone or collar me in the office to ask about it. It seems the dealers are usually ready to make a good deal on trading in their old iron and before taking the final leap they want to consult someone, who quite often happens to be me. An old friend fired this question at me recently and here is what I told him.

"The Mercury is a good reliable car that will give you a lot of trouble-free service. It's no ball of fire. If you want real flash performance, get something else. But if you are interested in big car comfort and reasonable performance, and if the looks don't scare you, then you won't go wrong."

SPECIFICATIONS

MODEL TESTED:
1953 Mercury four-door sedan with Mercomatic transmission

ENGINE:
8 cylinder; bore 3.188 inches, stroke 4.0 inches; maximum torque 211 foot pounds @ 2000 rpm; brake horsepower 125 @ 3600 rpm; piston displacement 255 cubic inches; compression ratio 7.2 to 1

DIMENSIONS:
Wheelbase 118 inches; overall length 202 inches; tread 58 inches front, 56 rear; width 73½ inches; height 62½ inches; weight 3,700 pounds; standard tire size 7.10x15; gas tank 20 gals

PERFORMANCE:
0 to 30 mph, 5.5 seconds (using L & D); 6.8 in Drive all the way
0 to 50 mph, 12.0 seconds
0 to 60 mph, 16.08 seconds
Top speed, 93-94 mph

In the Mercury class the competition is pretty rugged. There is the Olds 88, the Pontiac and the new V8 Dodge, to say nothing of the V8 Studebaker, small Packard and Kaiser. The field is loaded in this price class so making a choice takes you down to pretty rock-bed considerations such as: How good a deal can you make with the dealer? And how does the Merc stack up against these other jobs for your particular purposes? To start with, the Merc will match them all in reliability and Mercury service from coast to coast is good. In acceleration and top speed performance some of these cars can cream the 1953 Mercury with ease—and I mean *ease*—

[*Continued on page* 164]

"Company pays $1200 for cost-cutting idea!" "Employee wins $350 for suggestion!" Ever wonder how *you* can cash in on *your* company's suggestion system? Check these Bostitch case histories. There may be an idea here for *you* — and *your* company.

BUSINESS: Cabinetmaker

SUGGESTION: Fasten bottoms and sides of small chests with Bostitch foot-powered stapling machine and ⅜" staples.

RESULTS: Five times faster than old method of nailing. Stapling more secure. Workers like it better.

BUSINESS: Gasoline Pump Manufacturer

SUGGESTION: Instead of solder, use ⅜" staples to fasten No. 8 mesh on foot valve bottom of pump.

RESULTS: Production jumped from 20 an hour by soldering to 90 an hour with Bostitch.

BUSINESS: Tile Contractor

SUGGESTION: Instead of nailing metal lath to wood studs and joists, use Bostitch hammers and tackers.

RESULTS: One man can now lath 4 bathrooms in 2½ hours compared to 5 hours the old way.

BUSINESS: Garage Door Manufacturer

SUGGESTION: Metal stitch aluminum panels together with Bostitch wire stitcher. Old method: drill and screw.

RESULTS: Plant turns out 500 doors a day as against 50 before. Stitcher and special table jigs for positioning panels save space, material.

BUSINESS: Vacuum Cleaner Manufacturer

SUGGESTION: To fasten metal discs inside fiber cylinders, use Bostitch metal stitcher instead of punching holes and riveting.

RESULTS: Manufacturer saved $6250 the first year.

BUSINESS: Frozen Food Locker

SUGGESTION: Replace cellophane tape with Bostitch desk-type stapler for fastening ends of frozen food packages.

RESULTS: Labor and material costs cut 50%. Bostitch method gives tight, permanent seal. Unlike tape, will not loosen at low temperatures.

TO HELP YOU find ways to apply Bostitch savings to *your* business, send for the 16-page illustrated booklet, "Time and Money-Saving Case Histories." It's *free*—and full of cost-cutting ideas!

BOSTITCH® AND FASTER fastens it better with wire

BOSTITCH *563 Mechanic Street, Westerly, R. I.*

Please send me a free copy of the Bostitch book of case histories.

Name _____

Address _____

City _____ *State* _____

Company _____ *Position* _____

"Buy the tool that does... 5 kinds of jobs well!"

The SARGENT "GRIP-SNIP"*

1. **CUTS WIRE EASILY** . . . outside cutters cut wire even when it tightly hugs a flat surface.
2. **GRIPS LIKE A VISE** . . . a wrench-like grip that doesn't slip. Compound leverage multiplies power along entire length of jaws.
3. **HOLDS NUTS LIKE A WRENCH** . . . powerful parallel jaws and extra leverage prevent rounding corners.
4. **GETS INTO TIGHT SPOTS** . . . small nose of jaws permits working in close quarters.
5. **UNKINKS WIRE** . . . run wire between jaws, from either end, to straighten or pull it.

★ ★ ★

Don't be without your Sargent "Grip-Snip" another day. See 4½, 5½, 6½ and 8-inch lengths at your hardware dealer. Mechanics, sportsmen, farmers and handymen call it their favorite. For further details, write Dept. 32C.

*Trade Mark

SARGENT of New Haven ®

Sargent and Company
New York
New Haven, Conn.
Chicago

Builders Hardware and Fine Tools since 1864

The '53 Mercury

[*Continued from page* 162]

but only one or two will come close to it in gasoline economy on the road. In traffic the Mercomatic transmission is not cheap to operate. With all this in mind, what do we have to go by? We find, as already stated, that the 1953 rig won't fit all categories so it's up to you to see if it's cut to your size.

I received quite a few inquiries last year, from owners who liked everything about their car except the absence of flash performance, as to the possibility of hopping up the Mercury. Since the car is basically a big Ford, there is a raft of speed equipment available to give the Merc a shot in the arm if you like that sort of thing, as I do. The easiest way to make a bearcat out of a Merc is to have Bill Frick, Art Vogel or Andy Granatelli slip a 1952 Caddie engine into it. This will cost about $1,000 and you will end up with a hollering wildcat that will take any American stock job at a traffic light.

For lesser dough, speed merchants will gladly install or sell you the parts for altering the stock engine. Of course, this can be done in various stages with various results. It is possible to install high-compression heads and so on without altering the general functional qualities of the automobile in the least. A slight hop-up will add quite a few horsepower and can be accomplished for as little as $150 to $200. For more moola you can make a real torpedo out of little Oscar but this calls for much more care if you don't want to disturb the car's original in-traffic and low-speed properties. Hot cams and a few other gimmicks can louse up a nice running, around-town car. But it is possible to buy cams that will boost output without noticeably affecting low-speed performance.

In summing up, I might say that few Mercury owners will be interested in the hop-up treatment because as it comes from Michigan it is a good automobile. If he wanted a ball of fire he would have bought one in the first place. However, for the guy who owns one because he likes everything Mercury offers except that lack of jet punch, it's a cinch to work a few more horses under the hood. •

Next Month . . .
McCAHILL TESTS THE AMAZING NEW DODGE V8
Don't Miss April
MECHANIX ILLUSTRATED
On Sale March 20

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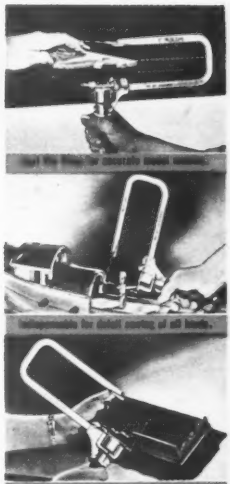
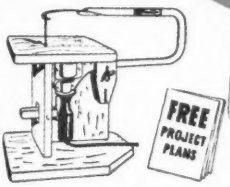
CUTS SCROLLS LIKE MAGIC ...SANDS AS IT SAWS

Only **$5.85** with 3 Saw Blades

SAFE AS A HANDSAW!

INDISPENSABLE FOR HOBBY OR WORKSHOP USE





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Have fun and save money. Make your own Jig-Saw stand. Complete, easy-to-follow plans furnished free with each Moto-Saw—also patterns for making six useful projects.

A Tool You'll Use When You're 8 or 80

Here is a genuine craftsman's tool with dozens of household and workshop uses. It is perfect for all sorts of coping and jig saw work, making window valances, knickknacks, hobby projects, etc. High-speed, reciprocating-type motor easily cuts asphalt and rubber tile, also masonite and formica—wood up to ¾". Perfectly safe for children—so easy to handle that women love to use it. Has only two moving parts, never needs oiling. A high quality tool used by craftsmen, tile layers, and carpenters.

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DREMEL *Electric* MOTO-TOOL

FASTEST MOST POWERFUL TOOL IN ITS CLASS—APPROX. 27,000 R.P.M. Most practical tool a man can own—more powerful than any similar tool you can buy. Works well in wood, plastics, and metal. For home maintenance jobs you'll wonder how you got along without it. For model making it's a must. And for general shop operations it saves time and money. Compare it, try it, buy it. You be the judge.

Check These Important Features: Oilless sealed bearings • Dynamically balanced armature • Shockproof, Bakelite housing • Dust-filtered air cooling system • Sturdy 110-120 V., A.C.-D.C. motor • Wt. only 13 oz. • A precision tool widely used in industry for many years.

KIT NO. 2—Includes Model 2 Moto-Tool and 23 Accessories (High-Speed Steel Cutters, Grinding Wheels, Polishers). Packed in sturdy hardwood case **$23.50**

KIT NO. 1—Includes Model 1 Moto-Tool and 34 Accessories (Steel Cutters, Grinding Wheels, Polishers, etc.). Packed in attractive lacquer-finished wood case **$17.50**

MOTO-TOOL NO. 2—Offers more convenience and long life features for the money than any other hand grinder. Thousands of satisfied users. Moto-Tool No. 2 (With 1 emery wheel point) **$16.50**

SEE YOUR LOCAL DEALER—Dremel Tools are sold at better dealers everywhere. If your dealer can't supply, order direct on a five-day trial, money-back guarantee. Remit in full, and we will ship postpaid. Or, send only $2.00 now, pay postman balance plus postage and C.O.D. fee.

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If You Make Painting a Hobby-

You'll get a lot more real satisfaction and pride of ownership out of a home that is clean and neat and trim in a fresh coat of paint! Pays its own way by improving your property, too!

Because Archer Pol-mer-ik contains polymerized oil, it gives you a tougher, more durable paint film than ordinary linseed oil. When you reduce your paints with Pol-mer-ik, they brush easier, level better, and give you a smoother, dirt-resisting finish. Wonderful brush conditioner, too!

Handiest single product in your house or shop. Does the job of a dozen specialized products. A few of

POL-MER-IK'S 101 HANDY USES:

ARCHER
Pol-mer-ik
LINSEED OIL
PROTECTS MOST EVERYTHING

Con Men Will Get You...

[*Continued from page* 61]

years as a doctor and surgeon in several hospitals in the East. Even the judge who had sentenced him to jail once had been under his care.

When a phony wants to make a fast buck, he'll stop at nothing. No disguise, no front is too fantastic. One of the most astonishing cases on record was uncovered about two years ago in a New Kensington, Pa. bank.

Two Ohio businessmen, H. A. McDevitt and J. H. McKeown, had their agent buy 540 of the bank's 750 shares for more than a quarter of a million dollars. The bank president accepted the deal and retired. The new majority stockholders subsequently elected a respectable, grey-haired assistant cashier as the new president. Then one day examiners came around and discovered that the bank's till was short a very substantial hunk of cash. Their investigations disclosed that the two businessmen from Ohio never existed. The real "businessman" was the assistant cashier who became president. He bought the bank with the bank's own money and elected himself president.

The most common and most notorious of phonies are check passers. In almost all cases, a fraudulent check passer has to assume a false front. In 1951 it was Frederick Emerson Peters. He even got away with posing once as President Franklin D. Roosevelt. No amateur at the game, he had been making a handsome living for about 50 years during which time he went under more than 130 different fronts. He even got money from his own parents by sending them a telegram under a phony name telling them that he, their son, was dead and money was needed to ship the body home.

Actually, many con artists are finding the postwar boom in mechanical developments and inventions the most fertile field of operations they've had in years. Usually they go after people who want to get in on some product invention or business scheme that will net them a quick profit on a small investment.

Recently, for instance, a man named Viens was a problem patient in a hospital: Doctors couldn't figure out what was wrong with him.

Then the patient got it off his chest. He told how he was worried about one of his inventions, an amazing plan for mass-producing atom bombs. He showed the doctor a check for $600,000 from the Chrysler Corp. of America. He even had on hand a model of a weird-looking machine which was supposed to be his invention.

[*Continued on page* 188]

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HEMISPHERICAL combustion chambers . . . hydraulic valve lifters . . . rotating valves . . . it's got everything! Flashing power . . . for thrilling adventure on America's highways and byways. Smooth riding comfort . . . for miles and miles of tireless travel. Eye-catching beauty . . . real class . . . the handsomest two-wheeler on the road. And an improved 55 HP, 74 OHV motor. Bring along a buddy and ride the Hydra-Glide today. Or send for free illustrated literature. Enclose 25 cents for your copy of the action-packed, picture-filled ENTHUSIAST Magazine. Harley-Davidson Motor Company, Dept. MI, Milwaukee 1, Wisconsin.

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Costs **ONLY** 12¢-13¢ per sq. ft.

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Cat Comes Back

[*Continued from page* 68]

point where two bunches of logs were set a little apart and bound to cross logs which were decked over with slats and reeds. In the early 1700s, the Polynesians replaced each bundle of logs with a light hollowed-out log. This craft has remained steadily popular with the Polynesian Islanders because whole families can be transported safely and quickly from one island to another on its broad deck.

Americans who have experimented in the field have modernized catamarans by applying western-world design knowledge and by using plywood and other comparatively new construction materials. One interesting craft thus developed is the 21x9½-ft. outboard runabout produced by Kattu Project, Inc., of Deland, Fla. Her designers state that she is stable, not only sideways like all catamarans, but fore and aft as well. This fore-and-aft stability is due to the airfoil-shaped bridge structure between her dual hulls. Air rushing in at the bow is compressed between the airfoil and the water. When the nose of the boat tries to go down, the center of air compression moves toward the bow and cushions the movement "like the cylinder of a door stop."

Besides steadying the boat, the airfoil provides lift; the faster the catamaran goes, the higher she climbs out of the water. This makes for an extremely economical high-speed boat. Driven by a 25-hp Mercury outboard motor, the Kattu carries eight adults 20 to 22 mph. And because of the airfoil action, she goes appreciably faster into the wind than down wind!

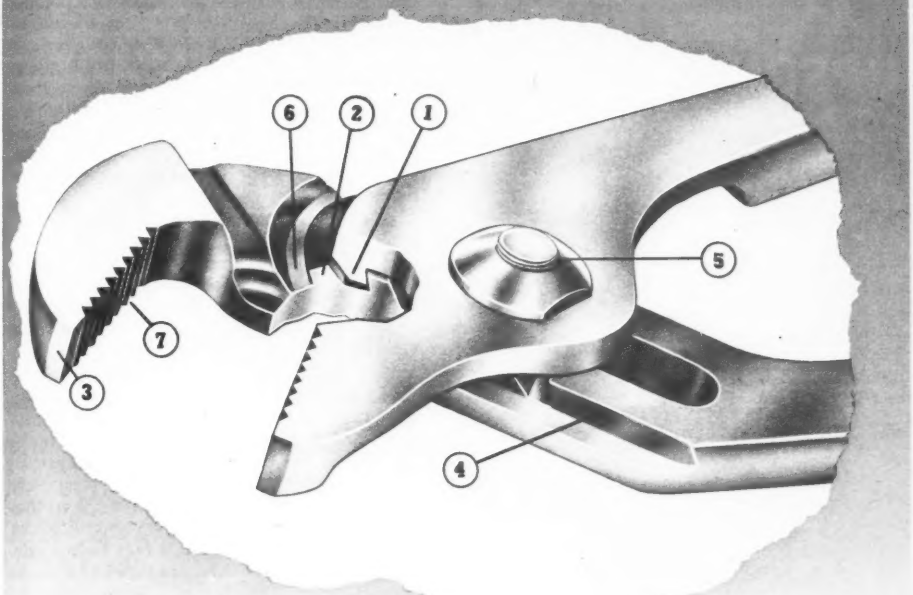
Sailboat enthusiasts have also been attracted by the catamaran, for she is an extremely fast sailer, especially in a beam wind. One of the most popular sailing cats is the 16-ft. Sailracer manufactured by Lear-Cat, Inc., of Santa Monica, Calif. Its outstanding features are low price, exceptional safety and a roomy cockpit that accommodates a family of four with ease. The Sailracer is available in both kit and complete forms. This boat has proved so popular that Lear-Cat has just announced two new models, a 12-ft. sailboat called Jet Sailer and a 12-ft. outboard-powered cat named Rocket. The latter has been clocked at 41 mph on test runs with a 25-hp motor. Like the Sailracer, these boats come in both kit and completed forms.

Another West-Coast builder of cats is Custom Hydrocraft in San Diego. This firm produces a 34-ft. auxiliary that has bunks for four. It also manufactures 16, 12 and 8-ft. cats in both kit and completed forms. •

The BEST is now BETTER than ever

THE NEW No. 420 CHANNELLOCK PLIER

TRADE MARK REG. U. S. PATENT OFFICE



Look at these NEW features . . .

1. Interlocking principle positively prevents slipping under any load . . . the heavier the job, the greater the interlocking action.
2. New type wide base lugs provide maximum cross section strength . . . cannot shear.
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Here's the new, improved Channellock Plier—bringing to you new features which offer more positive gripping, greater strength and longer wear. The undercut interlocking channel is the first really new idea in plier design in years. Engineering skill has developed a plier with new patented features which give you the newest, strongest, most practical plier you can buy. Here is a plier that will last for years! Channellock Pliers—made only by Champion DeArment Tool Co., Meadville, Pa.

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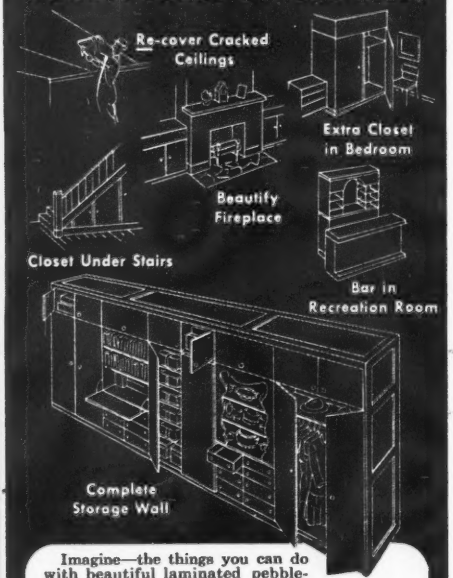
SAVE! BUILD IT *Better* WITH

UPSON PANELS

WONDER BOARD OF 1000 USES!



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Won't crack, splinter or chip. Finest painting surface on any panel material. Apply with invisible Upson Fasteners to make large seamless surfaces —**without visible face nailing!** You get good insulating value too. Lumber dealers have Upson Panels in 4′ widths, a variety of lengths, thicknesses. The ⅜″ thickness is available in full wall sizes—8′ wide x 12′, 14′, and 16′ long. Washable CEILING TILE also available.

Send 10c for 32 page Idea Booklet (working drawings for storage wall included **FREE.**) **Use coupon!**

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I enclose 10c for 32 page Idea Booklet. Include working drawings of Storage Wall.

Name_____

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Takes Spunk To Spelunk

[*Continued from page* 64]

the next day, Loubens used a field telephone to tell his companions above ground that he was ready to come up.

As he was being raised, he laughed and joked. Suddenly, he cried out: "I can't light my torch. I'm under a cascade of water!"

Then came a loud thud. Loubens crashed to the bottom. Volunteers going to his aid soon discovered that he was dead but for nearly a week attempts to bring his body up were frustrated at the risk of other lives. Finally, his body was covered over with a cross made of sheet tin and left underground as an eternal tribute to the strange breed of men who will risk their lives to see what other humans can never see.

If you should ever decide to go cave exploring yourself, there are some fundamental rules you ought to learn. The most important of these is never to enter a cave alone. Always go with at least one other person, so that if something should happen to one, the other can at least help or go for aid.

Last July, for instance, Charles Roger Finley, an 18-year-old youth from Dayton, Ohio, decided to explore Cascade Pit, a dangerous section in West Virginia's Schoolhouse Cave, one of the nation's toughest caves. He was lowered into the cave by his sister and brother. But their rope was too short so they began raising him again. The rope broke. Finley landed more than 200 feet below surface and by the time rescuers reached him, he was dead.

Although there are untold thousands of miles still to be explored in the caves that have already been discovered in practically every state in the Union (except Delaware), discovering a new cave is the ambition of every cave explorer.

It was just plain curiosity that led to discovery of the most spectacular cave of all time —Carlsbad Caverns in New Mexico. Jim White, a cowboy, was out in the desert one day, when suddenly he spied a strange column of thick black smoke rising from out of what appeared to be nowhere.

He galloped over. What he saw gave him the scare of his life. The column of "smoke" turned out to be a steady stream of millions of bats, flying out of a cave for their pre-dark flight for food.

Cowboy White investigated and eventually became the foreman of mining operations that were set up to remove bat guano. More than $5,000,000 worth of the stuff was removed. Today, Carlsbad Caverns is one of the world's most famous tourist attractions.

Real cave discoveries, however, can be

made by studying topographical maps and hunting around areas where caves are bound to have been formed over the years.

"Most caves are formed in limestone areas," says Howard Sloan, a New York publisher and one of the most ardent cave explorers in the country. "You can get a map from your state geological office. These maps will show limestone and other natural areas in which caves are formed. Then you go into the area itself and look around for such things as streams running into the ground and sink holes. A sink hole is a depression in the ground, perhaps the result of land collapsing into an underground cavern.

"If there's a cave around, its entrance may be no bigger than a hole big enough for a rabbit to crawl through. Then you start digging."

A member of the Northern New Jersey Grotto and membership director of the National Speleological Society, Mr. Sloan apparently knows what he is talking about. Last year, only six caves were known in New Jersey. Today, thanks to the exploration work of Mr. Sloan and his grotto, there are some 56 caves on the New Jersey map.

Anyone interested in joining or starting a cave-exploring grotto, Mr. Sloan says, can write to him at 425 West 25 Street, New York, N. Y. The society issues publications and booklets that help beginners.

Of course, if you find a cave, there's actually no telling what you'll find in it. Often you can pick up items of historical interest which can be sold to museums or collectors. Mr. Sloan says members of his grotto are always coming across Indian relics.

And early this year the Secretary of the Interior ruled that bat guano is a mineral "analogous to phosphate," and therefore much more valuable than heretofore believed. Anyone who explores on government property and discovers a cave loaded with bat guano is now entitled to a lease for getting the rich mineral deposit out. The leases will be issued through the Interior Department's Bureau of Small Land Management. But the caves have to be discovered first.

There are many rumors concerning pirates and thieves who used American caves in hills and along the seacoasts to hide fabulous fortunes and treasures. This aspect of cave exploring, some speleologists feel, is a long neglected one.

It takes spunk to spelunk, but the rewards—both aesthetic and monetary—can make it worth all the trouble. And there's the added compensation of knowing that you're pioneering what is probably the last frontier for adventure in America. •

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He Makes Merrymakers

Continued from page 80]

developed his own high-speed techniques. He took a couple of drill presses and equipped the heads with metal hat forms. Simply by pulling down the lever over a die-cut sheet of laminated foil he presses the paper into a hat the shape of which depends on the form used.

At the peak of the season, between September and December, Hoeflich employs about 300 neighborhood men and women who sit at benches and perform simple operations in the production of his wares.

Compressed air is used almost exclusively in his plant to operate the machines which do the rolling, forming, punching and stapling of the merrymakers.

The automatic machine that is currently used to make serpentine streamers is perhaps his most ambitious development to date. Built and designed three years ago, it slits paper to one-quarter inch width, winds it automatically to desired length, adds a fine dab of glue to the end, cuts off each roll and starts a new one. The machine produces 30 rolls a minute. Each contains 20 throws and no cores are used in the rolls. This makes them unique. Hoeflich plans to market his brainchild to the paper product industry specializing in household rolls, paper toweling and waxed paper.

Always keen for new ideas in paper products, a few years ago he created an open hand attached to a blow-out. When it was put to the mouth to be blown, it thumbed your nose while a printed slogan on the band such as "T'hell Witcha" added insult to injury.

Hoeflich felt that this was a very innocent funmaker and he sent it to the Patent Office in Washington for approval. A week later the Patent Office returned the idea saying it couldn't grant a patent on this item because it tended to "incite to riot."

Discouraged by the rejection, he sent some samples to the late Mayor LaGuardia as a gag. A few days later he received a letter from the Little Flower saying how much fun he had with them. Hoeflich sent this letter to the Patent Office along with some samples. LaGuardia's letter turned the trick. The patent was awarded and the novelty has since become a steady favorite at parties.

Does Hoeflich spend any of his time blowing horns on Halloween or New Year's Eve, or hurling serpentines at unsuspecting friends at parties or conventions? No sir! Hoeflich hates parties. He can't even bear the sound of noisemakers. He is an executive who would rather create noisemakers than be one. •

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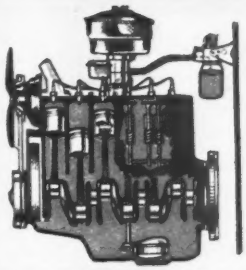

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Get it at your service station, auto parts or hardware store.

MONEY BACK GUARANTEE

Mothballing Your Rifle

[*Continued from page* 98]

This test is effective because each time a gun is fired a certain amount of fine particles of nitrate are blown back and lodge in the receiver or action and the hand of the shooter. You eventually wash your hands after shooting, but your gun may receive this spray of carbon and nitrate particles for months, or even years, without being cleaned. While its corrosive action is not too harsh, it does cause the coating of parts and results in sludge which slows down the action time. The best method of cleaning is to remove the action from the stock and give it a thorough "sloshing" bath in gasoline or lighter fluid. You will be surprised at the color of this fluid when you are through.

Scratches and cuts in the stock can be removed with a fine grade of sandpaper and most stains can be removed with lighter fluid. When the wood is glassy smooth, it should be painted with one application of boiled linseed oil and stored in a dry place for a few days. Then another application and another period of storage. The excess oil should then be wiped off with a soft cloth and then with a hard cloth. Then comes the work. In attaining a really fine polish, no instrument has ever been invented that can equal the heel of the hand. Rub, rub, rub and rub some more. Put it away for a day and then rub again. If you really take a pride in a fine stock, this will give it to you.

With the rifle now clean inside and out, it is ready to be stored. Do not put it away in a canvas, leather or lined case. Instead, locate a dry closet as dust-free as possible, transport it there with a lightly oiled cloth in your hand and before leaving it wipe it thoroughly to insure against having removed the oily film or having left a finger print on a metal surface. Perspiration can etch your print right into the metal. If you use a gun cabinet, it is a good idea to have an oily cloth or an oil-impregnated piece of sheepskin at hand to insure against rust that results from handling. Friends that come in often like to "look over your armament" and when they are through the quick wiping with the oily pad takes only a few seconds but it can mean everything to the appearance of your gun.

During the period of storage it is always a sound plan to make a casual inspection every month or six weeks to insure that the arm is in proper condition.

If your examination shows that some of the fouling has been loosened during storage, wipe out and re-oil.

Remember the rule: "a lot of cleaning and a little oil." •

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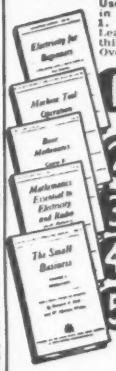

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First Car Across U.S.A.

[*Continued from page* 71]

for a blacksmith shop, having broken a spring."

Two tires arrived from San Francisco and after three days of rest and repairs the motorists started across the Oregon desert. Here the Winton lost its cyclometer, a pre-speedometer distance recording device, and henceforth the travelers never knew exactly how far they had gone. Water was scarce. Dr. Jackson and Crocker drank from their water bottles but put alkali water from desert springs into the radiator. At Silver Springs they ran out of gasoline. Crocker had to walk 29 miles at night to Burns for more. He returned the next morning with two gallons of gasoline and three of benzine.

At Ontario, on the Oregon-Idaho border, four new tires arrived from Akron. The Winton crossed the Snake River by ferry and started southeastward along the railroad tracks.

A few miles out rain began to fall. The car slithered crazily and then became mired. Crocker brought out the block and tackle. By attaching this to a tree ahead, they managed to pull the Winton to firmer ground. The impotent whirling of its rear wheels in the mud gave them an idea. At the next mud hole they tied the rope about one of the big hubs. By winding up the rope, the car pulled itself out! This was often repeated.

At midnight, June 13, the car reached Caldwell, Idaho. A dog fight, in which two bull terriers battled, was staged there by residents in honor of the visitors. Dr. Jackson was horrified by the spectacle but liked the winning dog and bought him as a mascot. Christened "Bud" and given a pair of goggles to protect his eyes from the dust, he took a seat between the two men.

More rain fell. They followed the bed of a stream toward Mountain Home only to be engulfed by suddenly rising water. The dog swam ashore. Dr. Jackson and Crocker found a log, planted it on the far bank and attached the block and tackle. They pulled with all their strength but could not budge the mired machine. Six hours later a farmer and a four-horse team pulled it out.

Following the Union Pacific tracks, bumping along the cross-ties for miles, the Winton got to Pocatello on June 17. It reached Soda Springs the next day.

"The first automobile to invade Soda Springs," noted the local newspaper, "rounded the corner at Whitman's store just at sundown Tuesday night. When the cowboys, sheepherders and Indians recovered from their surprise, they caught their breath and

let out a whoop that was taken up and passed along the entire length of the block. The interest in roulette and twenty-one was temporarily suspended until the strange machine had been thoroughly examined. . ."

At Montpelier, Idaho, the ball bearings rolled out of one of the front wheels. The ingenious Crocker found some of the same size in a mowing machine and had the superintendent of the local railroad shop make a cone for them.

Heavy downpours of rain greeted the Winton in southern Wyoming. Sagebrush had to be laid ahead of the car's wheels. With the roadway completely washed out, the travelers turned north near Granger into a wasteland. For 36 hours they were without food and saw no human beings.

They encountered then a lonely sheepherder who cooked them a generous meal of mutton and canned corn. He refused money but accepted Dr. Jackson's rifle as a present. The herder directed them to the Green River and they followed it south to the Union Pacific tracks. The next day, they crossed the Continental Divide.

As the car was being driven from hotel to livery stable at Rawlins on June 23, the stud bolt of a connecting rod broke. Dr. Jackson telegraphed the Winton company for parts and they arrived C.O.D. five days later.

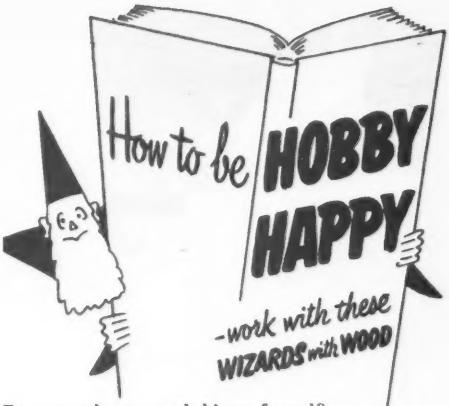
At Medicine Bow he paid $5.25 for five gallons of gasoline and the car continued along the railroad toward Laramie, where the Winton arrived the night of June 30. There Dr. Jackson and Crocker learned that they had rivals. Ten days earlier, Tom Fetch and Marius Krarup had started another transcontinental effort from San Francisco. They were in a new Packard with a special low gear for sand and mountain travel. They were traveling fast, straight east through Nevada and Utah. There also was word that a "curved-dash" Oldsmobile, the model that inspired the song, My Merry Oldsmobile, was about to start from San Francisco for New York.

The news spurred Dr. Jackson to even greater effort. He and Crocker began to rise at dawn and, with regular four-hour turns at the wheel, drive as late as possible, often sleeping alongside the car.

Union Pacific telegraphers flashed ahead word of the Winton's approach. Schools often were dismissed. Some cowboys who had never seen an automobile rode 60 miles to see "the mad doctor" churn through in the *Vermont*.

In Nebraska a swarm of grasshoppers so thick that the wheels of the Winton could obtain no traction delayed the party. Then rain began again. The block and tackle had

[*Continued on page* 179]



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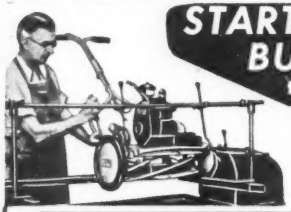

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Postpaid in U.S.A. No C.O.D.'s

ALLYSON COMPANY
P.O. Box 115
Brevoort Station
Brooklyn 16, New York

First Car Across U.S.A.

[*Continued from page* 177]

to be used 17 times one day and the car traveled only six miles. Horses had to be employed several times. Dr. Jackson was so covered with mud that a frightened farm wife took him for a tramp and announced: "We don't give handouts."

Near Kearney, Nebr., the Winton smashed its front axle. Crocker fitted the broken ends into a piece of pipe obtained from a farmer and a few miles later a blacksmith welded the pieces.

The *Vermont* reached Omaha on Sunday, July 12. At this point, Dr. Jackson was informed by the Winton and Goodrich companies, which so far had charged him full price for all parts and tires, that they would be happy to supply him free. Both the Packard and Oldsmobile expeditions, with professional drivers at the wheels, were racing east and the commercial advantages of helping "the mad doctor" had become apparent.

Still hampered by rain and mud, Jackson and Crocker pushed on to Des Moines and Chicago, arriving there Friday morning, July 17. At Elyria, Ohio, a procession of cars from the Winton factory met the travelers and escorted them into Cleveland.

Rolling through the night over comparatively good roads now, the battered car arrived in Rochester, N. Y., at 2:30 a. m. on July 23. From Little Falls, under the first cloudless skies in weeks, they rolled down the Mohawk Valley, crossed the Hudson River and turned south on the old Albany Post Road at the car's top speed. Saturday crowds cheered them through Hudson and Poughkeepsie. At Fishkill, Dr. Jackson's wife and father and a delegation of Winton men met them and followed in other cars.

At 4:30 a. m., Sunday, July 26, the mud-covered Winton ended its trip at New York's old Holland House, Fifth Avenue and 30th Street. The car had covered 230 miles in the last 24 hours.

The rival Packard was in Nebraska and the Oldsmobile in Colorado.

Dr. Jackson had lost 20 pounds in weight. He and Crocker had traveled approximately 6,000 miles in 63 days but had not driven at all on 19 days. The car and expense of the trip had cost Dr. Jackson $8,000.

Many could not believe that the feat had been accomplished. "It is well known to men familiar with the western part of the United States," said the Sporting Times, "that for a car to get through certain parts of Oregon and Nebraska without the assistance of a railroad train is an impossibility."

[*Continued on page* 181]

You can afford this great finish Sander

Finish Sands 10 Times Faster than by hand

Now, you can get satin-smooth finishes with only one tenth the work of hand sanding. Use the B&D Utility #44 Sander for preparing new surfaces, smoothing seams, refinishing furniture, removing old paint—even a beginner does a professional job with this light-weight (only 5½ lbs.), easy-to-use tool!

TRY IT TODAY at your hardware, appliance or department store. Has such *exclusive* features as: KING-SIZE BOTTOM PLATE extending beyond tool body for close work • MODERN SWITCH HANDLE close to housing for better control, less fatigue • AUXILIARY KNOB HANDLE offering three positions for sanding close to obstructions • UNIQUE PAPER HOLDER stays open while changing paper, frees both hands for job!

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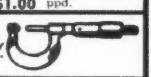

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Send 10c for Big Catalog of 4000 Novelties

First Car Across U.S.A.

[*Continued from page* 179]

The Winton Motor Carriage Company came warmly to Dr. Jackson's defense, offering a reward of $25,000 to "anyone who will prove that Dr. Jackson used other than the one car for the entire journey . . . or that he was forced to resort to a railroad train at any stage."

The reward was still unclaimed when the Winton company went out of business in 1924. But Tom Fetch, the Packard driver, insisted until his death years later that his car, *Old Pacific,* now in the Greenfield Museum, was the first automobile to cross the country under its own power. Some history books like Mark Sullivan's Our Times gave Fetch the credit.

In 1944, the controversy was resolved finally in Dr. Jackson's favor. He offered his records and the old Winton to the Smithsonian Institution in Washington. It was accepted and is now displayed there along with the airplane in which Charles Lindbergh flew the Atlantic and other noted transportation relics.

Both Crocker and the bull terrier, Bud, died a few years after the trip but Dr. Jackson still lives in Burlington. At 81 he looks back on a career that has included mining in Mexico and Alaska, publishing a newspaper, operating a radio station and heading a bank.

Except for his war service as a medical officer in World War I, for which he was decorated, he recalls the trip in the *Vermont* as the most exciting and dangerous adventure of his crowded life.

And the $50 bet that started it all? "The man never paid it," says Colonel Jackson, as he is now known. "And I never asked him for it." •

See April Mechanix Illustrated for Old Car Contest Winners.

1903—GOLDEN ANNIVERSARY—1953

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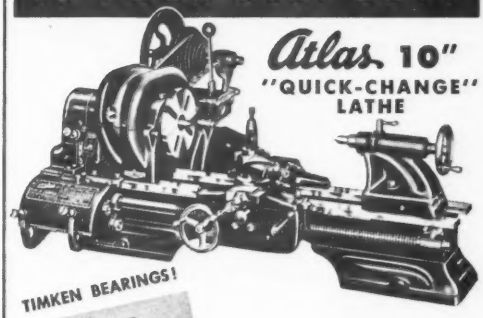

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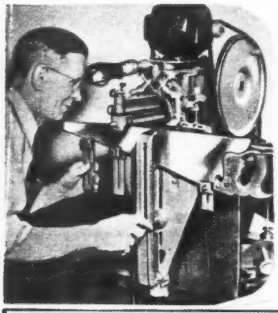

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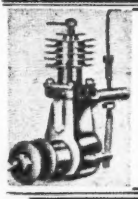

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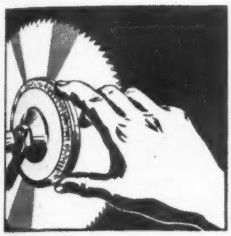

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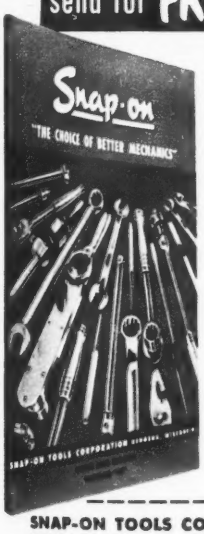

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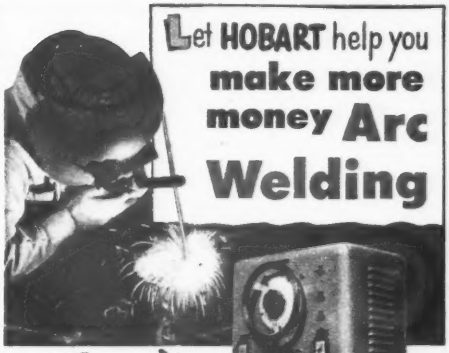

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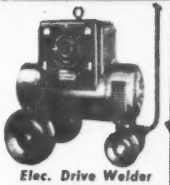

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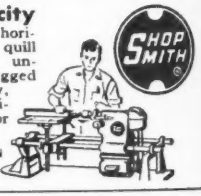

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Con Men Will Get You...

[*Continued from page* 166]

Later, relieved of his problem and pronounced cured, the patient gratefully offered the doctor a chance to get into the promising new atom-bomb corporation. The doctor gave him $20,000 to invest and that was the last he saw of his patient and his money. Sadly the doctor found from the police that his "patient" had already swindled more than $150,000 from six others and that Viens, as an inventor, was tops in inventing stories.

Happily, though, the picture is not all bleak. Not all frauds manage to succeed in their schemes. Shrewd observers have been known to catch the best of them long before the cops can be called.

One such phony last year didn't count on being trapped by his shoes. Posing as an important business executive, he approached a shoe clerk in a San Francisco store where he befriended him and offered him a lucrative distributorship in plastics for an investment of only $1,500. Everything looked good. The clerk was about to shell out. Habitually, however, he happened to glance down at his benefactor's shoes. That sounded a warning. He investigated and the man was trapped. Said the shoe clerk, "I didn't think that a man wearing $5.98 shoes could be the big shot he claimed to be."

A little more observation like this on the part of the average American and most phonies would have to switch professions. Time and again various stunts have been pulled in different parts of the country in an effort to dramatize for Americans the fact that they should always look *before* leaping.

You may not be so lucky if you don't get wise to the phonies. According to all experts whose job it is to combat the fleece-'em-and-run operators, there's one rule you can observe stringently as a safeguard. Take your time before handing over anything to anybody, especially strangers. Most phonies can work in one way only—fast! Slow 'em down; investigate before you invest.

Even if you have no way of checking yourself, as most people don't, there are organizations who stand ready to give you every possible assistance, free.

One of the most famous of these is the Better Business Bureau, which has some 100 offices operating in key cities throughout the nation.

It is a good idea to always have handy the address and telephone number of your nearest one. If you don't know where it is, write to the National Better Business Bureau headquarters at 405 Lexington Avenue, New York City. •

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THE AKRON 4400 SUNSET BLVD. LOS ANGELES 27, CALIF. MI-3

Telescope Maker's Page

[*Continued from page* 149]

at three equidistant points around the platform. Note that the shoulder of the tripod leg sets squarely against the 45° bevel cut around the platform. Final operation consists of drilling a ¾ in. hole in the center of the platform to pass the threaded rod of the yoke. Yoke is fastened to telescope body by means of ¼x20 knurled nuts.

The only critical part in making this instrument is getting the exact distance between the objective lens and the eyepiece. This is best done by screwing the eyepiece all the way in and then backing off a half turn. The objective is then moved back and forth until an object at infinity (at least 500 ft.) is in focus. This then, is the point at which the objective should be mounted. The objective lens is held in place with two pieces of split tubing. If you are a little off in your calculations it is a simple matter to remove the forward piece of split tubing, remove lens and adjust rear piece back or forth to necessary position. To avoid glare, tube is lined with black flocked cloth.—*Paul Palanek.* •

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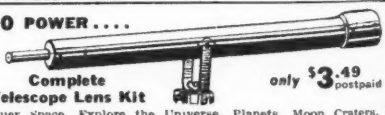

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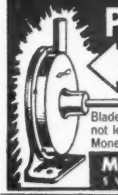

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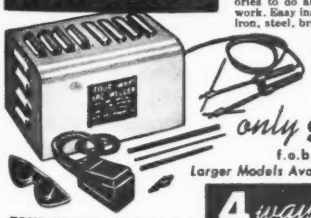

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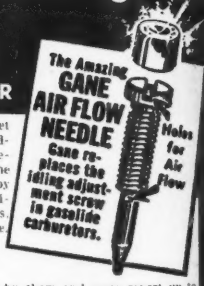

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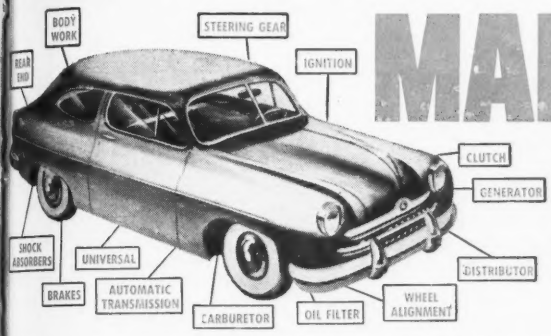

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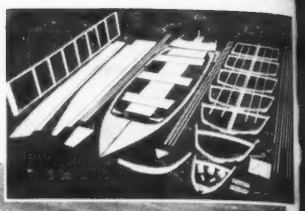

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